



Sociedad Internacional de Derecho del Trabajo y de la Seguridad Social

XXIII Congreso Mundial

7 - 10 de Septiembre de 2021 - Lima, Perú

RETOS DE LOS SISTEMAS DE LEGISLACIÓN LABORAL Y SEGURIDAD SOCIAL

- Transformación del trabajo: desafíos para el Derecho del Trabajo
- Comercio internacional y trabajo
- Nuevos retos de la Seguridad Social
- Trabajadores migrantes
- Trabajadores atípicos e informales
- Igualdad en el trabajo
- El Estado y las nuevas formas de voz colectiva

SPDTSS

SOCIEDAD PERUANA DE DERECHO DEL TRABAJO Y DE LA SEGURIDAD SOCIAL



Sociedad Internacional de Derecho del
Trabajo y de la Seguridad Social

XXIII Congreso Mundial

7 - 10 de Septiembre de 2021 - Lima, Perú

RETOS DE LOS SISTEMAS DE LEGISLACIÓN LABORAL Y SEGURIDAD SOCIAL

- Transformación del trabajo:
desafíos para el Derecho del Trabajo
- Comercio internacional y trabajo
- Nuevos retos de la Seguridad Social
- Trabajadores migrantes
- Trabajadores atípicos e informales
- Igualdad en el trabajo
- El Estado y las nuevas formas de
voz colectiva

PATROCINADORES



PERÚ

Ministerio de Trabajo
y Promoción del Empleo



UNIVERSIDAD
DE LIMA

AUSPICIADORES



UNIVERSIDAD
DE PIURA



Retos de los Sistemas de Legislación Laboral y Seguridad Social
PRIMERA EDICIÓN DIGITAL MARZO 2023
Prohibida su reproducción total o parcial DERECHOS RESERVADOS D. Leg. N.º 822
<p>Autores: Alberto Pizzoferrato / Sergio Torres Teixeira / Wilfredo Sanguinetti Raymond / Kurt Paerli / Masahiko Iwamura / Helga Špadina / Petra Herzfeld Olsson / Pamhidzai Bamu / Roberto Fragale Filho / María Luisa Molero Marañón / Bernd Waas / Oscar Raúl Chuquillanqui Aragón / Carlos De Fuentes García-Romero De Tejada / Marina Fernández Ramírez / Carmen Ferradans Caramés / Giovanni Gaudio / Francisca Moreno Romero / María Olaya Martín Rodríguez / Rodrigo Palomo Vélez / Adrián Pérez Pastrana / César Alfredo Puntriano Rosas / María Carmen Tatay Puchades / Mireia Llobera / Dulce María Cairós Barreto / Carlos García Gallego / María Katia García Landaburu / Luis Gordo González / Oscar Hernández Álvarez / José Eduardo López Ahumada / Priscila Martín Vales / Rosa María Morato García / Daniel Peres Díaz / Gastón López Argonz / Matthieu Chabannes / Leopoldo Gamarra Vilchez / Miguel Ángel Martínez-Gijón Machuca / Javier Paitán Martínez / Leiso Fasney Restrepo Aguirre / Gaye Burcu Yıldız / Francisca Bernal Santamaria / Karla Giamnina Cánova Talledo / Chiara Cristofolini/ Vincenzo Cangemi/ Roberto Pettinelli / Ljubinka Kovačević/ Boško Latković / Kwang-Taek Lee / Jovana Rajić-Čalić / Jovana Misailović / Carlos Eduardo Saco Chipana / Daniel Ulloa Millares / Christa Caro Palacios / Ángela Sofía Bilbao Pazmiño / Laura Sofía Pérez Pianda / Stefano Guadagno / Chiara Hassemer / Flávia Souza Máximo Pereira / Luis Mendoza Legoaas / Fiorella Peyrone Villacorta / Ivan Ramiro Campero Villalba / Lilli Carollo / Macarena Castro Conde / Emilio De Castro Marín / Viviana Mariel Dobarro / María Begoña García Gil / Luciana Guaglianone / María Laura Parisi / Balwinder Kaur / Diego Megino Fernández / Pedro Oliveira / Ccantu Stefany Osorio Velarde / Luz Pacheco Zerga / María Gema Quintero Lima / Carmen Grau Pineda / Concha Sanz Sáez / Sarai Rodríguez González / Fernando Varela Bohórquez / Juan Manuel Moreno Díaz.</p>
<p>Coordinadora: María Katia García Landaburú</p> <p>© Comisión Organizadora del Congreso: Germán Ramírez-Gastón Ballón (Presidente), Guillermo Boza Pró, María Katia García Landaburu, Emilio Morgado Valenzuela, Mónica Pizarro Díaz, Michael Vidal Salazar</p>
<p>Copyright 2021 Sociedad Peruana de Derecho del Trabajo y de la Seguridad Social</p>
<p>Sociedad Peruana de Derecho del Trabajo y de la Seguridad Social Dirección: Av. Dos de Mayo 516, dpto. 201. Miraflores - Lima, Perú Telef.: 51(1) 7055586</p>
<p>ISBN: 978-9972-9422-4-2 Hecho el Depósito Legal en la Biblioteca Nacional del Perú N.º 2023-02736 Publicado en el mes de marzo de 2023 DERECHOS RESERVADOS. Prohibida su reproducción parcial o total (D. Leg. 822)</p>

En su edición electrónica, el libro alcanza a un número de lectores peruanos y del extranjero, de los ámbitos universitario, gremial, profesional, impulsando el estudio del Derecho del Trabajo y de la Seguridad Social. Esta edición se encuentra alojada y disponible para descarga libre en la página web de la Sociedad Peruana de Derecho del Trabajo y de la Seguridad Social: www.spdts.org.pe

COMISIÓN ORGANIZADORA DEL CONGRESO

Germán Ramírez-Gastón Ballón (Presidente)

Guillermo Boza Pró

María Katia García Landaburu

Emilio Morgado Valenzuela

Mónica Pizarro Díaz

Michael Vidal Salazar

COMISIÓN REVISORA DE PONENCIAS

Guillermo Boza Pró

Ana Cecilia Crisanto Castañeda

María Katia García Landaburu

César Gonzales Hunt

Sandro Nuñez Paz

Estela Ospina Salinas

Luz Pacheco Zerga

Mónica Pizarro Díaz

César Puntriano Rosas

Germán Ramírez-Gastón Ballón

Michael Vidal Salazar

**TRANSFORMACIÓN DEL TRABAJO:
DESAFÍOS PARA EL DERECHO DEL TRABAJO**

**TRANSFORMATION OF WORK:
CHALLENGES TO LABOR LAW**

TRANSFORMATION OF WORK: CHALLENGES TO LABOUR LAW

ALBERTO PIZZOFERRATO

Professor of Labour Law, University of Bologna, Vice-President for
Western Europe of ISLSSL

SUMMARY: 1. Introduction. 2. New technologies and transformation of work. 2a. New technologies (advanced robotics, Internet of things, big data analytics & machine learning, augmented reality, wearable technology, and additive manufacturing). 2b. Consequences on safety&health. 2c. Consequences on work organization. 2d. Consequences on job market. 2e. Algorithms, AI and the impact on work organization. 2f. New forms of work monitoring & surveillance. 3. Remote working during and after pandemic. 4. Present and forthcoming operative scenario for HR management: from globalization to digitization by way of fissuring work and employees outsourcing. 5. The classification issue. 6. Digital monitoring, employee's privacy, and time's porosity. 7. Conclusive remarks. Social regulation as antidote to globalization inequalities

1. INTRODUCTION

Globalization, demographic changes and technological progress have already produced relevant impacts on labour law, as well as on labour markets, involving both the quantity and quality of jobs that are available. Nevertheless, it is the recent speed up and growing pace of technology, especially in Artificial Intelligence and machine learning, that have caused serious concerns not only on the future of labour standards but also on the fundamental/constitutional values of work dignity, equal treatment, social cohesion, sustainability, inclusiveness, and solidarity. To ensure the resilience and adaptability of the social model in developed economies and, at the same time, to boost the efforts made by emerging countries towards a stable escape from informal labour relationships and unfair working conditions and wages, in our opinion there is only one way: restating the regulative approach based at international and supranational level, with renewed multilateral and collaborative interactions, that can lead to a convergent set of intangible social standards to be envisaged by the States in their market law decision making process. No other measure could better prevent unjust polarization between capital and labour and massive work exploitation under the threat of technological unemployment. National States have to deal with global issues; the responses and solutions given should be in respect of international labour standards and be guided towards the purposes and goals established by normative acts of the ILO, including recommendations

and declarations (i.e., the *ILO Centenary Declaration for the Future of Work*, 21st June 2019), and of other international institutions such as the United Nations.

Before entering into details of the new challenges and tools for employment law, we should give a brief outlook of the main technologies affecting the workplace and its organization and the way of performing and controlling the correct execution of tasks. Having an essential representation of workforce analytics, algorithms and remote working, and their repercussions in terms of time porosity, access to worker's personal data, digitisation of managerial powers, is essential to properly detecting labour issues at stake and finding out the best solutions to keep the benefits of innovation while preserving the core standards and the public social security schemes. A redistribution of protection within standard and nonstandard workers could be acceptable, as well as a shifting of protection from the single relationship to the Public Institutions. But we might agree to the fact that, even though the work is a productive factor, at the same time it is not a commodity; indeed, it is characteristic of the majority of humans to work for a living. Social conquests could be reshaped or rescheduled to safeguard a prominent interest or value, but they could not be rejected or dismantled in the light of that interest or value. Saving jobs during the spread of a pervasive automation could justify a shrinking or a revision of the legal protection ground, but not its cancelling. Freedom of economic initiative might always be tied to social justice and equal treatment; a system driven by profit-making alone is not compatible with sustainable development. Economic production systems must act under common and balanced rules, which stem from a compromise between capital and labour, not without or outside them.

The pandemic has accelerated the digitization of companies and factories and generalized a new method of labour organization based on project management, on the evaluation of individual performance, skills and targets, on integrated networking in the internal team and with external contractors, customers or advisories, that fully fits and responds to the new imposed physically distancing and remote working. Since Covid-19 erupted worldwide, the implementation of algorithms, networking tools and HR analytics sources have greatly contributed not only in limiting hours and job losses, but also in speeding up the economic recovery, allowing the enterprises to be efficient in the market short-term, assuming very low transactional costs. We may say that the dreadful health crisis we have coped with in the last year and a half has been

a great innovation driver for technological advancements and for changing the organization of functional corporations.

2. NEW TECHNOLOGIES AND TRANSFORMATION OF WORK

The social and economic effects of technology on labour have been at the centre of the political and academic debate for a long time. Private and public decisions concerning labour markets and working conditions of the employees are increasingly being influenced by technological considerations. Following the wave of technological progress related to digitization, artificial intelligence (AI), and automation, governments around the world have started to acknowledge that the exploitation of such technologies present both important opportunities and threats to their citizens. Klaus Schwab (2016), founder and executive chairman of the World Economic Forum, has emphasized the magnitude of these technological advancements by labelling the current period as the “Fourth Industrial Revolution”.

Growth in computing performance, wireless communications, energy storage and efficiency, innovations in computer-governed manufacturing tools, internet access and data storage have set the base for a profound transformation of work and of the labour market at large. These innovations reflect the pervasive digitization¹ of work tasks and activities that have impacted daily work routines in the last few decades. Indeed, many services that could only be performed by humans in the past—such as banking, accounting, trading of financial assets, managing orders for food and retail goods, transportation, managing reservations at restaurants or accommodations, monitoring energy usage—are now commonly carried out by software as a result of digitization.

At the frontier of digital innovation, some technologies have been recognized as the main drivers of the Fourth Industrial Revolution, based on the impact that they have on production systems and the organization of work overall: advanced robotics, Internet of things, big data analytics & machine learning, augmented reality, wearable technology, and additive manufacturing are all set to disrupt the way we conceive, organize, execute and monitor work.

1 Digitization refers to the transformation of information into a format that can be understood by computer software and transmitted via the internet (Goldfarb A., Tucker C., 2019). The close concept of “digitalization” is used more broadly to indicate the diffusion of digital technologies into businesses and the economy (Muro M. et al., 2017; Charbonneau K., Evans A., Sarker S., Suchanek L., 2017).

2a. **New technologies (advanced robotics, Internet of things, big data analytics & machine learning, augmented reality, wearable technology, and additive manufacturing)**

Advanced Robotics is defined as a «subfield of traditional robotics, characterized by the use and development of “smarter” robots which are able to operate in tougher and less structured environments, rely less on human intervention, and are capable of interacting with the outside world». What makes this technology “advanced” with respect to traditional robotics is «the existence of enhanced problem-solving, mobility, resistance, sensorial, intelligence and adaptability capacities which are not generally found in mainstream robotics»². Advanced robotics is often used in synergy with IoT (Internet of Things) technologies. The Internet of Things (IoT) indicates the aggregate collection of network-enabled devices that can communicate via Wi-Fi connections, Bluetooth connections, and near-field communication (NFC). The IoT includes devices such as “smart” appliances e.g., refrigerators and thermostats, home security systems, webcams and printers. Robots can therefore be included in an integrated, interconnected, and digitalized production system, which can ideally cover the whole extent of the supply chain. Thanks to the contextual implementation of Artificial Intelligence and connected sensors, robots are able to support and enhance human activity, while securing and complying with higher safety standards.

Big data analytics encompass a variety of tools designed to collect, store, process and elaborate on very large amounts of data, so that it can be used as a meaningful input in production processes. The stress here is on the capability of these tools to automatically analyse and interpret huge series of data for business intelligence purposes. The value of such technology lies in its ability to turn process, product and market data into strategic and meaningful information that the stakeholder can use to take business decisions. Big data analytics rely on Machine Learning, a specific application of Artificial Intelligence (see section 2a), which indicates the ability of machines to learn new action patterns, predict behaviours and, ultimately, make choices, based on the analysis of historical data. Big data analytics can be used to predict consumer or competitor behaviour, interpret market trends and profile customers and employees.

2 Hinojosa C., Potau X., 2017, p. 7.

Augmented reality (AR) is a particular combination of AI and big data, which results into “the overlay of computer graphics on the real world”³. If “virtual reality” indicates an environment that is completely built to be virtual, “augmented reality” refers to an environment where virtual elements are “added” to the real physical landscape. Its applications are multi-faceted, ranging from entertainment to military to medical appliances. In a corporate context, AR can be used for training purposes, or to support maintenance processes.

Wearable technology, also known as “wearables”, is a category of electronic devices that can be worn as accessories, embedded in clothing, implanted in the user’s body, or even tattooed on the skin. The devices are hands-free gadgets with practical uses, powered by microprocessors and enhanced with the ability to send and receive data via the Internet. The rapid adoption of such devices has placed wearable technology at the forefront of the Internet of things (IoT).

Finally, the concept of additive manufacturing refers to «the process of manufacturing objects by adding material in precise locations to form an object, based on a digital 3D model»⁴. 3D Printing is one typical application of additive manufacturing.

The implementation of these technologies in the production system has stirred relevant considerations about the changing work conditions of human resources.

2b. Consequences on safety&health

From a safety & health standpoint, the substitution of human work with automated work can eliminate the risks connected with particular tasks and activities deemed dangerous for the human in different sectors (e.g., agriculture, construction, logistics, healthcare, maintenance and cleaning). Indeed, new technologies (such as, for example, advanced robotics) are able to replace the human presence in unhealthy or dangerous environments, thus limiting repetitive or dangerous movements and preventing exposure to toxic substances. On the other hand, new technologies raise concerns regarding negative psychological impacts (erosion of free time, stress, sleep disorders, demotivation arising from the perception of the lower value added by the human contribution), cyber-

3 Silva R., De Oliveira J.C., Giraldi G.A., 2003, p. 1.

4 Van Barneveld J., Jansson T., 2017, p. 3.

security (e.g., data privacy and protection), musculoskeletal disorders (caused by an excessive sedentary lifestyle, repetitive movements or insufficient ergonomics), complexity of human-machine interaction (e.g., in case of machine malfunctioning). The pervasive performance control that can be perpetuated by the employer through the adoption of new AI-based monitoring technologies can also contribute, as examined below, to the detrimental effects on employees' productivity and psychological health.

The impact of new technologies, however, is not limited to health and safety considerations: the massive introduction of AI-powered technologies in recent times has had major consequences on work management at a micro level, and job market dynamics at a macro level.

2c. Consequences on work organization

The adoption of AI technologies in work practices has impacted management models on various organizational aspects. Contemporary, technology-backed work appears to be mainly characterized by a high degree of mobility, time flexibility, network interdependency, and a special focus on the “team” as the base unit of the organization.

The diffusion of mobile devices facilitates the generation, transmission and sharing of data, which can be accessed from all over the world. From this perspective, the “mobility” of modern work is deeply linked to the high degree of connectivity that exists nowadays between different actors, who are able to constantly produce, use and share information with one another, wherever they are. This is made possible by the introduction of technologies such as 5G, which makes it possible to establish a simultaneous connection with a very high number of devices, and cloud technology, which gives access to storage spaces not confined to the enterprise physical boundaries, making information virtually available to a wide plethora of users.

Thanks to the new opportunities granted by mobile connectivity, work performance can be executed potentially anywhere and anytime. Timing of work activities tends to become more flexible and limit-less, whereas the “place” of work is not anymore restricted to the enterprise's premises and hardware. In this context, the emergence of ICT-based mobile work (or remote working) is drawing the attention of academics and institutions worldwide, which are trying

to assess the perks and shortcomings of this new style of work. This paradigm shift appears to be favoured by a «more general trend towards work that is project-based and fragmented, on-demand and performance-paid»⁵.

New technologies are making organizations increasingly intertwined and interdependent: according to Armano (2017), the idea of the enterprise as a monolithic, independent entity is giving way to a new conceptualization of the company, seen as part of wider networks, connecting different actors (independent knowledge workers, other companies, institutions, organizations) that pursue common objectives and are keen on sharing resources to produce synergies. Butera⁶ notes that the new technologies have enabled the creation of highly interconnected supply-chains, where technologies are allowed to perform automatic tasks or transmit and store information between the different organization units that are part of the supply chain network (e.g., the enterprise, suppliers, vendors, public institutions, schools).

Flexible and interconnected work implicitly requires employees to further develop skills such as self-organization, proactivity, responsibility, autonomy, creativity and, ultimately, the ability to operate in teams⁷. F. Butera⁸ asserts that the Team has become the base organization unit of the enterprise, as opposed to the rigid, pyramidal-shaped, hierarchical organization.

Recent reports from the Eurofound stress the increasing importance of multidisciplinary team work, as part of new organizational processes^{9 10 11}.

2d. Consequences on the job market

Many fear that the automation of work and the new ways management has organized around it will eventually result in the disruption of the job market and workforce dynamics to levels unseen before. No theoretical consensus has emerged among scholars, though, as to what effects new technologies will have

5 Eurofound, 2020a, p.14.

6 Butera F., 2017.

7 Bennato A., 2018.

8 *Ibidem*

9 Eurofund, 2018a.

10 Eurofound, 2018b.

11 Eurofound, 2019.

on the labor market in terms of employment levels, growth rates, compensation changes and public policies.

Agrawal, Gans, and Goldfarb (2019) report that the economic effects of automation on labour are varied, complex, and unclear at this point. Some AI predictive capabilities may replace human decision-making and labour, while many others will complement it and make it more like: “Overall, we cannot assess the net effect of artificial intelligence on labor, even in the short run. Instead, most applications of artificial intelligence have multiple forces that impact jobs, both increasing and decreasing the demand for labor. The net effect is an empirical question and will vary across applications and industries”.

Other scholars (Brynjolfsson and McAfee 2014; Ford 2015; Stone et al. 2016) have focused on the tasks that can be carried out by AI (for example, object and activity recognition, language translation, and robotics), concluding that AI will mostly affect workers performing routine tasks in the middle of the wage distribution. Nevertheless, AI is likely to increasingly automate cognitive tasks that are not considered routine at the moment, too. Digital technologies will lead to the loss and/or transformation of jobs, and they have the potential to foster inequality among different groups of workers: in particular, low-qualified, low-skilled young people face a greater risk of being displaced by advanced technologies, as compared to workers with higher qualifications and skills. Although it seems obvious that high-wage jobs involving more complex tasks (such as influencing, reading, writing, and computer programming) are less automatable and therefore less exposed to technology displacement, it is still unclear to which extent they will face competition from machines that are increasingly able to perform cognitive tasks (Arntz, Gregory, and Zierahn, 2016).

What is sure is that the demand for workers that are highly skilled in digital technologies has increased steadily in recent years (Muro et al., 2017), with the share of workers in digital-intensive occupations increasing from 4.8% in 2002 to 23% in 2016. Muro et al. (2017) discovered that also those occupations with medium or low digitalization skill requirements became more digital intensive from 2002 to 2016, suggesting that even the contents of such occupations are bound to require increasing levels of digital literacy.

It is likely that demand for entirely new professions will rise, especially among technology-producing firms. Professionals capable of training AI systems to carry out intelligent tasks (e.g., natural language processing, teaching customer

service chatbots to mimic and detect the complexities of human communication, teaching compassion, humour and sarcasm to AI systems like Siri and Alexa) will be high in demand. There will also be a need for professionals able to perform maintenance of AI systems, to ensure that they are operating as intended and to correct unintended or flawed behaviour. Along with more technical occupations, there will also be growing demand for management workers who can understand the new technology and who can communicate technical details to non-technical professionals and consumers, filling the gap between high-tech experts, businesspeople and final consumers. As implied by the European Union's General Data Protection Regulation, companies will also require data experts, such as Data Protection Officers, to protect privacy-related issues.

Consistently with these projections, it is interesting to notice that business survey evidence suggests a positive relationship between labor demand and the implementation of new technology. Bughin et al. (2018) surveyed executives from large organizations and found that only 6% expect their workforce in the U.S. and Europe to shrink as a result of automation and AI. Indeed, among the interviewed, 17% expect their workforce to grow instead. Arntz, Gregory, and Zierahn (2016) estimate that only 9% of workers in the U.S., and in the average OECD country will be at high risk of losing their job due to automation within an unspecified number of years. Similarly, Nedelkoska and Quintini (2018) found 14% of jobs across 32 countries are at risk of automation displacement.

As new empirical evidence aimed at explaining such relations emerges, it is necessary to remember that technological progress and market behaviour are deeply influenced by public policies and other social forces. Mass public education, regulation, trade and immigration policies and public support for R&D can all play a role in the development of new technologies and the capacity of employees and consumers to successfully use and work with them.

2e. Algorithms, AI and the impact on work organization

It is important to underline that all of the aforementioned digital advancements represent the technological frontier of an evolution continuum which stems from different applications of Automation, in particular Algorithms and AI. Therefore, it seems particularly compelling to explore these concepts in their main applications and implications for contemporary work.

Automation is commonly defined by economists as the substitution of non-human value for human production value. Acemoglu and Restrepo (2019), define automation as the “development and adoption of new technologies that enable capital to be substituted for labour in a range of tasks”, that is any instance where capital replaces labour as the source of value in the chain of production. Automation therefore represents the source of value-added in a production process that is not performed by a human being.

As such, AI, machine learning, and digitization can be seen as specific delineations of automation.

There is no consensus in the economics or computer science literature as to the proper meaning of “artificial intelligence.” AI could be defined as the automation of *cognitive* tasks that are part of the production value chain. Simply put, Artificial intelligence (AI) is a wide-ranging branch of computer science concerned with building smart machines capable of performing tasks that typically require human intelligence. This is consistent with a wider definition given by an expert committee on AI, which defined it as “that activity devoted to making machines intelligent” (Stone et al. 2016, p.12). AI applications include advanced web search engines, recommendation systems (such as those used by Netflix or Amazon), understanding human speech (such as Siri or Alexa), self-driving cars (e.g., Tesla). Famous recent examples of AI include IBM’s creation of Deep Blue and Watson, algorithms that defeated champions in chess and the game show Jeopardy, respectively. Other examples include the creation of AlphaGo by DeepMind, a Google-owned company, which created an algorithm that could defeat the leading Go champion, and Siri, acquired by Apple, which built a sophisticated voice-recognition software. At an elementary level, we can say that AI consists of a series of algorithms that leverage machine and deep learning capabilities to perform a series of actions and decisions that would normally require cognitive capacity.

Algorithms are sets of coded instructions designed for software to solve a problem or complete a task. Algorithms nowadays are used in a great variety of applications, ranging from browser search results to healthcare, buildings design, financial trading, and delivery services. This is particularly evident in the gig economy: Uber, Lyft, Deliveroo and other platforms simply could not exist without algorithms allocating orders to riders, monitoring task execution, evaluating the workers performance and rewarding work.

In the workplace, self-learning algorithmic computer systems are being introduced by enterprises to support hiring practices, task-setting, performance monitoring, productivity measurement and even employment termination. Algorithms have reached such a degree of sophistication that companies are increasingly granting self-learning algorithms the responsibility to make decisions. This practice is known as “algorithmic management” and, although efficient in terms of cost and time saving, it carries a lot of risks.

Algorithms execute what their code tells them to: the problem is that this code is rarely made available, making algorithms hard to scrutinize or even understand. Since their decision-making processes is hidden, algorithms act like “black boxes”, enhancing the power imbalance between management and workers. Its inconsiderate utilization can contribute to management depersonalization and bias confirmation, especially when used in hiring processes to evaluate candidates. In fact, machine-learning algorithms combined with biometric devices can detect the emotional expressions of job applicants, match them with associated personality traits and, in doing so, screen out prospective applicants that present undesirable characteristics, on the basis of language, tone and facial expressions. For instance, Amazon attracted negative publicity in 2018 when its Edinburgh engineering hub was found to be using AI algorithms to sort job applications, with the lexical analysis of CVs favouring words more commonly used by male applicants, thus discriminating against women (Reuters, 2018).

A growing number of companies are adopting specific kinds of algorithms designed to profile, evaluate and rank their own employees, based on specific performance indicators built around data collected via surveillance and monitoring technologies. Such tools are increasingly being adopted by companies, which raises concern on various levels, as explored in section 2b.

2f. New forms of work monitoring & surveillance

National Legislators are increasingly confronted with new and ever-evolving sets of issues arising from technological change in employee monitoring and surveillance.

To different extents, employers regularly engage in the monitoring of employees’ activities. Such activity is legitimate on certain grounds: for example, to safeguard an organization’s assets and property rights, ensure safety and

compliance with legal and regulatory requirements, track performance and optimize processes and, not least, prevent criminal or fraudulent activities. With remote working becoming more common, also due to the outbreak of the covid pandemic, employers may view the use of some monitoring systems as a legitimate way to ensure accountability and trackability of their employees' work. Technological progress, however, has allowed for more intrusive employee monitoring and surveillance practices, which raise many concerns with regard to workers' health and privacy.

The European Company Survey 2019 shows that roughly half of establishments in the EU27 and the UK exploit data analytics for process improvement (24%), for monitoring employees (5%) or for both (22%). A 2018 Gartner survey of 239 large international corporations found that more than 50% were using some type of non-traditional employee-tracking and/or monitoring techniques. This was up from 30% in 2015. Experts estimated, without even accounting for COVID19, that by the end of 2021 about 80% of companies will be engaging in such practices (Ceurstemont, S., 2020).

Employee monitoring and surveillance are not new phenomena. ICT companies have, for a long time, been developing online workplace surveillance (software) tools and apps such as ActivTrak, InterGuard, Veriato 360, Teramind, WorkSmart, Work Examiner and Sneek. The scope and functionality of these tools range from basic monitoring of employees' online activities to business intelligence reporting and data analytics to process employees' data. These technologies were originally developed to tackle the so-called 'cyberloafing', that is, the tendency of employees to use email and the internet for private purposes while at work – which research estimates amounts to 30% to 65% of overall internet usage at work (Burdin et al., 2020).

Today, a wide range of increasingly ubiquitous technologies can be used for employee surveillance purposes, going beyond the conventional forms of monitoring, such as closed-circuit television (CCTV) cameras and the monitoring of emails, internet usage and telephone calls. These range from artificial intelligence (AI) (e.g. automated and semi-automated systems, including algorithmic decision-making and management, machine learning and deep learning tools); big data and data analytics (e.g. use of digital tools for analyzing data collected at the establishment or from other sources); biometrics (i.e. all processes used to recognize, authenticate and identify persons based on physical and/or behavioral

characteristics); Global positioning system (GPS) (global navigation satellite system for localizing and tracing goods and people); Internet of things (IoT) and ‘wearables’ (e.g. smartwatches, head-mounted displays, body cameras and smart clothing applications that can send information to one another through sensors); and Radio-frequency identification (RFID) system of electronic tagging used to identify and trace objects and people and store information¹².

In particular, wearable technology – such as smartwatches, smart glasses and smart bracelets with in-built GPS sensors tracking movements and location– is an emerging trend in the workplace (Deloitte, 2018). While on one hand these technologies can help ensure compliance with policies, secure the traceability of company assets and resources, or monitor the exposure of the employees to dangerous substances, they also provide the employer with data that can be later used to increase work intensity, reduce free time and sanction underperformance of the worker. Not surprisingly, there are many examples of controversy reported in media regarding wearable devices used for employee monitoring. For instance, the Amazon’s handheld scanner is a company tool officially used in warehouses to record task completion and coordinate work among employees. These scanners, however, can also be used to monitor employees’ actions (miles walked, objects delivered or packed), compare them against established production targets, and keep track of interruptions, such as toilet breaks. According to a UK survey carried out by worker rights platform Organise, 74% of the Amazon workers surveyed declared to refrain from using the toilet for fear of missing performance targets, and 55% reported having suffered depression since working at Amazon (Organise, 2018).

It is apparent that these technologies present serious implications in terms of privacy and ethical concerns, as well as of worker-employer relation, since digitally enabled monitoring and surveillance inevitably shift power dynamics and asymmetries in the workplace, favouring the employer, who can now leverage an ever-increasing array of digital tools to collect and exploit employee data (Colclough, C., 2020).

Consequences on job quality are notably important, too, as the side-effects of constant and pervasive employee monitoring include higher work intensification, reduced work autonomy, increasing levels of stress and anxiety, lower levels of trust towards management and greater interference of work in the private

12 Eurofound, 2020b.

sphere. The pervasive (and growing) use of ever more sophisticated surveillance and monitoring devices can violate the psychological contract (CIPD, 2021) at the base of the mutual expectations and assumptions between employers and their workers (McParland and Connolly, 2020; Clarke, 2020). This can, in turn, adversely affect worker motivation, and damage their sense of control and autonomy, eventually leading to lower productivity, and higher absenteeism. It is argued that digitally enabled employee monitoring can also have a role in the “gamification of work, placing workers in constant competition with one another, fostering a toxic work environment”. Moreover, such tools have the potential to promote discrimination, resulting from both the type and quality of the often-sensitive data collected. This can be potentially used for employees’ profiling purposes, or to drive automated decision-making processes, which have a significant impact on the working conditions of the employees. For instance, the practice of collecting data on workers’ health through biometrics-tracking wearables may result in discrimination regarding their career and pay progression (employers might decide not to invest resources in a physically “weak” individual). Employees may not be aware of the amount of data that they give away and may not even realize that they are disclosing personal information to their employer or third parties.

The current trends in surveillance worry the public in general, and workers are in a riskier position. There is indeed growing concern – especially among trade unions – about the invasion of privacy suffered by remote workers. Trade unions are worried that data collected at this time with the legitimation of the pandemic emergency could be used in the future, by the employers, once the emergency is over, for punitive and negative purposes.

Such concerns are justified by the massive growth in remote working brought about by the COVID-19 pandemic, which has further pushed employers to massively adopt surveillance technologies in the attempt to better control the new conditions posed by home-working.

3. REMOTE WORKING DURING AND AFTER THE PANDEMIC

The outbreak of the Covid-19 pandemic brought unprecedented changes to the global economy and the world of work, prompting governments worldwide to tackle the public health emergency with drastic measures, one of which was the nationwide lockdown in many countries. Due to the stay-at-home measures,

many workplaces were forced to close and countries encouraged employers to introduce full-time, mandatory telework¹³ for their workforces to the extent practicable given their functions. This active encouragement of homeworking made teleworking the customary way of working for many employees and organizations, including those with previously limited or no experience working this way and created the conditions to carry out ‘*an unprecedented, large-scale experiment in mass teleworking*’¹⁴, which seems likely to continue beyond the end of the pandemic.

In this extraordinary situation, which brings both unique opportunities and great challenges, countries, employers, and workers have faced great challenges in adapting to the new work-from-home environment, depending on the pre-epidemic trends in the spread of teleworking in the various countries, sectors and occupations. Predictions that teleworking would become a dominant way of working date back to the beginnings of the information revolution in the 1980s¹⁵. However, most recent estimates prior to the Covid-19 pandemic indicated that working from home accounted for a relatively marginal share of paid labour: just 7,9% of the world’s workforce, or approximately 260 million workers, were permanent home-based workers¹⁶. Most of them lived in lower-middle income countries and worked as artisans, self-employed business owners or industrial homeworkers (e.g., seamstresses, embroidery stitchers, beedi rollers). Employees accounted for 19% of the total number of home-based workers worldwide, although this number was as high as 54% in high-income countries, where home-based work was dominated by teleworkers who worked remotely from their homes carrying out office tasks¹⁷. Globally, among all employees, 3% were working exclusively or mainly from their home before the pandemic¹⁸.

Within the EU, the incidence of regular or occasional teleworking varied from 30% or more in Denmark, the Netherlands and Sweden to 10% or less in the Czech Republic, Greece, Italy, and Poland; between these two extremes, there were countries such as Belgium, France and Portugal where the share of

13 According to the definition given by Eurofound and ILO, 2017, telework is the use of information and communications technologies (ICTs), such as smartphones, tablets, laptops, and desktop computers, for work that is performed outside the employer’s premises.

14 ILO, 2020a.

15 Toffler A., 1980.

16 ILO, 2021a.

17 *Ibidem*.

18 ILO, 2020a.

telework ranged from 15% to 24%. Depending on the studies, up to 20% of the United States workforce were regularly or occasionally working from home or another alternative location, 16% in Japan, and just 1,6% in Argentina¹⁹.

In general, the highest presence of telework was in the sectors classified as teleworkable, but even in that case the estimated prevalence was rather low. Teleworking had mainly been used by highly skilled workers who did most of their computer work, enjoyed high degrees of autonomy and were employed in knowledge-intensive activities²⁰. On the other extreme, the lowest prevalence of telework was in the mostly non-essential sectors that include most of manufacturing and construction²¹. Against this backdrop, the Covid-19 crisis caused far-reaching changes in a very short time. Telework reached a tipping point as more and more companies and institutions have introduced this work arrangement in an effort to keep their employees safe, while ensuring the continued delivery of critical services.

Yet, the large differences, related to the previous situation and the actual use of teleworking - both between countries and sectors -, have necessarily affected the expansion of telework practices and probably had a very different impact for some governments, employers, and workers than for others. The available data on the prevalence of telework before the Covid crisis contributes to the general impression of very asymmetric outcomes of the lockdown measures for the labour markets, which is to be added to the already very asymmetric impact of the pandemic itself.

Switching from company-based working to remote working wasn't a simple or smooth transition for all enterprises and public organizations. Many of them, lacking the ICT infrastructures, the skills and training resources to support their teams transition to teleworking or the organizational and managerial culture, may have found it difficult to reorganize their work from home in the immediate aftermath of the outbreak. Furthermore, the fact that in several countries more than half of those who started teleworking had no prior experience, arguably made the transition even more difficult, due to the absence of internal health and safety guidelines for the home office, of labour legislation recognizing teleworking employees the same rights and protections as office workers and of data

19 Eurofound and ILO, 2017.

20 EU Commission, 2020a.

21 Fana M, Tolan S., Torrejón S., Urzi Brancati C., Fernández-Macías E., 2020.

security and privacy concerns. In addition, reflecting the greater prevalence of telework among high-skilled workers, access to telework has been considerably more widespread among well-paid individuals, so that, while the pandemic exacerbated the gap between those who cannot work from home, at the same time, inequality is bound to increase, starting from an already high level²².

As said before, because of the government-issued stay-home orders, the number of remote workers increased exponentially. Yet, more than a year after the onset of the pandemic, it is still not known exactly how many people globally work or have worked from home. This lack of information is mainly attributable to the fact that not all countries collected data from household surveys during the pandemic and even among the available surveys, relatively few have at disposal information on working from home²³. However, as more and more data become available, international institutions are trying to outline the home-based employment proportion.

The ILO²⁴ estimates that during the second quarter of 2020, 557 million workers worked from home, accounting for 17,4% of the world's employment (with a percentage of 35% for the United States; 25% for other high-income countries such as Austria, Canada, Chile, Great Britain, Greece, Italy, Spain, Portugal; 17% for upper-middle-income countries, such as Argentina, Bosnia and H., Brazil, Costa Rica, Ecuador, Georgia, Malaysia, Mexico, Peru, the Russian Federation, Serbia, South Africa; 14% for the lower-middle and low-income country group, Egypt, Ethiopia, Kenya, Mongolia, Morocco, Mali, Nigeria, Tunisia, Uganda, Vietnam).

As far as the European countries are concerned, almost 4 out 10 employees started teleworking during the pandemic²⁵. The most significant increase in teleworking took place in countries that were most affected by the virus, and where teleworking was well developed before the pandemic. In 2020, 12,3% of employed people aged 15-64 in the EU usually worked from home, although this share had remained constant at around 5% over the past decade. The share of employees who usually work from home increased from 3,2% in 2019 to 10,8% in 2020, while the share for the self-employed increased to a smaller

22 ILO, 2021b.

23 EU Commission, 2020b.

24 ILO, 2021a.

25 Eurofound, 2020b.

extent: from 19,4% in 2019 to 22,0% in 2020. Overall, combining both categories, from 2019 to 2020, the Covid-19 crisis generated an increase of 6,6 p.p. over a one-year period.

The EU Member States show very disparate situations among employed people working from home, especially considering the frequency of home working, whether it is occasional or usual²⁶. In this regard, it was found that in Finland, close to 60% of employees switched to working from home; in Luxembourg, the Netherlands, Belgium, and Denmark, over 50%, in Ireland, Austria, Italy, and Sweden, around 40% of employees were teleworking. In these countries, fewer workers had their working time reduced. In contrast, the lowest shares of home-workers were reported in Bulgaria (1,2%), Romania (2,5%), Croatia (3,1%) and Hungary (3,6%)²⁷.

On average, in Europe, 24% of employees that have never worked from home before, started teleworking, compared to 56% of employees, who have worked from home occasionally before. Differences in the industrial structure are one of the main factors explaining the varying prevalence of telework across EU countries²⁸. However, differences in the share of telework across EU countries were sizable even within the same sector. For instance, while in Sweden and the Netherlands more than 60% of workers in knowledge-intensive business services were teleworking, this fraction was below 30% in Italy, and even lower in Austria and Germany. Similar cross-country differences in the sectoral prevalence of telework can be observed in education, IT and communication, and to a lesser extent in administrative and support services²⁹.

Despite more severe restrictions being imposed throughout Europe in early 2021 compared to summer 2020, the Eurofound e-survey results show that teleworking was less prevalent³⁰. In spring 2021, working exclusively from home was most common in Ireland (48%) and least common in Croatia (9%) and Bulgaria (10%), while the largest drop in working only from home was

26 Eurostat, 2020.

27 Eurostat, 2021.

28 Eurofound, 2020c, reports that in 2019 telework was structurally more widespread in countries - such as Sweden, Finland, and Denmark - with larger shares of employment in knowledge - and ICT-intensive services; these countries are also those where the largest proportion of workers began to telework as a result of the pandemic.

29 EU Commission, 2020.

30 Eurofound, 2020c.

recorded in Spain (from 46% to 21%) and Italy (from 48% to 26%). In several other countries, the incidence of working from home increased, notably in the Netherlands (from 22% to 37%).

Meanwhile, the proportion of people who worked exclusively from the employer's premises increased in most countries, especially in Denmark (from 41% to 66%) and Cyprus (from 43% to 67%). There was an increase in the proportion of people combining working from the employer's premises and from home in spring 2021 – a mode of work that was markedly more common in western than in eastern Member States, especially in Austria, Finland, France, Luxembourg, Malta and the Netherlands. While the incidence of working from home has declined in the latest phase of the pandemic, the preference to do so every day has increased since summer 2020. Most employees still express a preference to combine working from home and from the employer's premises. The most popular choice being to work from home several times a week.

In this regard, while in summer 2020 the wish to telework over the long term (at least several times a week) was similar among men (44%) and women (45%), by spring 2021 women were more likely to have this preference (49% compared with 43% of men). In the period from summer 2020 to spring 2021, the increase in the preference to work from home was strongest among those currently working only from home (from 62% to 73%), but it was also significant among those who were currently combining working from home and from the employers' premises (43% to 53%). There was no change in view among those working only at their employer's premises (26%), which in part probably reflects the types of jobs that cannot be done from home.

Compared to the period previous covid-19, when there were proportionately more men than women working from home, the situation clearly changed in 2020, where women working from home became relatively predominant: in EU for example 21,8% of employed women worked from home in 2020 against 20,4% of employed men³¹.

In this regard, it must be stressed that, despite teleworking being widely considered to better combine family and work obligations, during the pandemic it is questionable whether working from home actually improved work-life balance due to the closures of schools and childcare institutions. Research shows

31 Eurostat, 2021.

differences between men and women in terms of work–life balance, highlighting that women, and particularly those with young children who worked only from home, have been shouldering the lion’s share of the increase in unpaid care and household work during the pandemic³².

The massive increase in the number of people working remotely as a response to the Covid-19 emergency, despite being planned as a temporary, short-term solution, has been going on for months and this might have some longer-term consequences in several different aspects. The full impact of Covid-19 on the labour markets is still uncertain, however, it is likely that teleworking rates will remain significantly higher than they were before the onset of the pandemic. The expanded use of telework could become part of the “*new and better normal*” for years to come and, consequently, bring permanent changes to the employer/employee relationships³³.

Even the next phases of the pandemic, as the previous ones, will show a high degree of uncertainty, entailing again hybrid or blended forms of isolation (i.e., teleworking) and deconfinement. In this context, even those organizations that will have the possibility to use physical workplaces, will have to comply with severe hygiene and safety regulations, continued restrictions and controlled conditions based on physical distancing that may not make it possible for the entire workforce to return safely to the employer’s premises. At the same time, the most vulnerable and high-risk groups will need to be protected, which is why home-based telework will remain necessary in the near future for at least a part of the workforce.

More generally, in a long-term perspective, the spread of teleworking will depend on a wide range of factors, including its effects on productivity and working conditions, as well as the achievement of broader policy goals such as the digitization and the green transition³⁴. While studies conducted in the past suggested that in normal times people who work from home can maintain, or even improve, their productivity while achieving a better work-life balance, in the actual emergency circumstances, productivity, working conditions, or both, may be deteriorated due to, among others, the lack of childcare, suitable workspaces and ICT tools. Meanwhile - as stressed by the EU Commission in the

32 Eurofound, 2021a.

33 ILO, 2020b; Eurofound, 2020d.

34 EU Commission, 2020a.

communication on the 2020 country specific recommendations - the benefits of telework may not be available to the unskilled or untrained³⁵.

A number of national surveys and studies confirm that remote working is likely to become a permanent characteristic of post-pandemic working life. In Italy, for example, estimates of the Smart Working Observatory (2020), show that the number of workers involved in telework could reach up to 5,350,000 in the future, up from 570 000 in 2019. Smart working is expected to increase in the public administrations sector as well as for occupational groups presenting “teleworkable” activities (e.g., administration and management). In the US, Global Workplace Analytics (Global Workplace Analytics, *Work at home after Covid - our forecast*) estimates that around 25-30% of workers will be working from home on a multiple-days-a-week basis by the end of 2021. A survey on companies conducted by Enterprise Technology Research (ETR), shows that the percentage of workers in the USA permanently working from home is expected to double by the end of 2021 (34.4%) (World Economic Forum, 2020). However, the “hybrid model” that is set to prevail, will require the re-thinking of the way work is carried out, organized, and regulated.

To maintain high levels of teleworking even once the pandemic ends, a joint action by relevant governments departments and agencies, representatives of employers, trade unions and professional associations will be imperative. It is worth noting that worldwide, before the Covid-19 pandemic, there was limited regulatory activity pertaining to telework and most of the regulation only took place within organizations. Existing international labour standards only address some aspects of telework, but, for example, do not provide for rights and responsibilities of workers and employers³⁶. The most notable piece of legislation

35 EU Commission, 2020b.

36 See, among others, ILO Occupational Safety and Health Convention, 1981 (No. 155) and ILO Occupational Safety and Health Recommendation, 1981 (No. 164) about the right to request telework in a situation where the worker considers that the workplace poses an imminent danger to her/his well-being; ILO Hours of Work (Commerce and Offices) Convention, 1930 (No. 30) , that be used to address the maximum daily and weekly hours for workers in offices and commerce, and by extension, to teleworkers; ILO Weekly Rest (Commerce and Offices) Convention, 1957 (No. 106), that could also be applied to ensure teleworkers receive a period of at least 24 consecutive hours of rest during any workweek; ILO Holidays with Pay Convention (Revised), 1970 (No. 132) that might also apply to teleworkers as other workplace-based workers; ILO Home Work Convention, 1996 (No. 177); ILO Home Work Recommendation, 1996 (No. 184), though not applicable to workers who telework on a partial or occasional ad-hoc basis; ILO Code of Practice on the Protection of Workers’ Personal Data that could be applicable to teleworkers.

was the 2002 European Union Framework Agreement on Telework. Things started changing from the beginning of 2020 and through the course of the Covid-19 crisis when regulatory activity on telework substantially increased.

However national governments continued adopting different frameworks³⁷. Some States, where regulations were used broadly, adapted them to address telework in emergency times; in other countries, national authorities extended existing regulatory guidelines on how to deal with teleworking; in some others, legislation on flexible work arrangements - that allows workers to ask for flexibility as to the location where they work - have been extended to include telework. This was the case of Australia, Canada, New Zealand and the United Kingdom. Other governments provided for specific regulatory guidance on telework, that, although not legally binding, sets a framework for workers and employers to tackle teleworking, organizes remote working performances and deals with major related problems. China and Indonesia, among others, developed this kind of regulatory guidance on telework. Something similar is a mixed system of statutory regulation and regulatory guidance, used in countries, such as Japan and South Korea: here, national legislation permits remote work as part of broader flexible work arrangements, while regulatory guidance provides a better definition of how the flexible work arrangements, such as telework, can be framed and used. This guidance might not be legally binding.

First steps in initiating change have been made as the expanded use of telework during the Covid-19 crisis exposed gaps in the frameworks that can provide guidance to workers and employers about how to use telework to meet worker and employer needs. A growing number of social actors and policymakers has begun to take regulatory action in this context. Nonetheless, given the increased prevalence and the probable stabilization of teleworking as a consequence of the expanded use of telework during the Covid-19 crisis, the need for widespread and comprehensive regulatory action is expected to grow in the future.

Due to the COVID-19 pandemic, there has been a steep increase in the demand for online workplace surveillance tools and data analytics systems to process employees' data (Burdin 2020). According to Google trends, the use of the search term 'remote employee monitoring' peaked around the beginning of the COVID-19 lockdown in spring 2020, while sales of the Sneek online

37 ILO, 2021c.

surveillance software increased tenfold in the USA, just a few weeks after the COVID-19 outbreak. (Gifford, C., 2020; Burdin C., et al., 2020).

As previously seen, the increased usage by employers of online monitoring and surveillance methods may add to the employees' anxiety and stress levels and increase the invasion of the privacy at the expense of remote workers. It should also be noted that it is not only employees who may experience greater levels of stress, anxiety and higher workload. Managers themselves trying to co-ordinate and manage remote teams may also be subject to such teleworking-related effects. For example, Microsoft in China has estimated that managing remote teams added an extra 90 minutes per week to the working time of managers due to more one-on-one calls and online meetings (ILO, 2020b).

With the return to post-COVID 'normality', the extensive use of teleworking is expected to continue, although not on a full-time basis. It is likely that when the restrictions imposed by the pandemic will end, hybrid forms of telework combining remote and office working will predominate. These arrangements would meet workers' preference, as reported by the Eurofound online survey conducted in July 2020. Results show that over three-quarters of EU employees (78%) want to continue working from home at least sometimes in the post-COVID-19 future, opting for a hybrid model of working which mixes teleworking and onsite working, while few employees (13%) wish to work remotely all the time.

4. PRESENT AND FORTHCOMING OPERATIVE SCENARIO FOR HR MANAGEMENT: FROM GLOBALIZATION TO DIGITIZATION BY WAY OF FISSURING WORK AND EMPLOYEES OUTSOURCING

In the recent past, the world of work has suffered a terrible 'race to the bottom' in terms of standards circumvention and cutting labour costs, which is still ongoing nowadays. This race between companies all over the world has been pushed through globalization of supply chains and fissuring of work. The market pressure for cost reduction has convinced entrepreneurs to act in two directions for outsourcing employees' risks and liabilities: the first one is to relocate plants and services outside the borders of the belonging country, where the labour cost is lower due to the lack of employment entitlements and rights. This social dumping practice, well known from the early '90s, has been empowered by the strategy of transnational companies to provide the production and distribution

of goods and services throughout a global network, which has multiple bases in emerging countries, and which can benefit from State regulatory deficiencies or ineffectiveness, from violation of human rights, from corruption or other criminal behaviours. Being involved in global supply chains for a less developed country is essential to plan and promote the siting of foreign companies and the flowing of their investments even on the agreement of a safe conduct on labour inspections and a free managing of workforce in contempt of every elementary human and social rights.

The second trend lies on contracting out job performances, downsizing undertakings and focusing on the core entrepreneurial activities. The business model is simple: shedding all the activities which are not core competencies (i.e., that do not provide the greatest value to their consumers and investors) to other companies, shifting to them the hiring and employee management exposure. It has been called the ‘fissured workplace’ by David Weil (academic researcher and President Obama’s head of the Department of Labour’s Wage and Hour Division) that calls back a geology term: a fissure in a once solid rock that both deepens and spreads. As the fissure deepens and spreads in the rock, in the same way, once an activity is shed, the secondary businesses doing that work often deepen the fissure even further by shifting those activities to other businesses. The farther down in the fissure one goes, the slimmer the profit margins and the greater the incentive to cut corners. The result is that economic value created by corporations is not shared with employees (except for workers who remain inside their walls), nor with the subcontractors, but is kept by shareholders and investors, leading to a stagnation of real wages for most of the jobs formerly done inside. *“The broader changes involved in fissuring mean that its impact goes beyond the narrower concepts of contingent work or alternative work arrangements. This changing business model, the ‘fissured workplace’, means that in more and more workplaces, the employment relationship has been broken into pieces, often shifted to subcontractors, third-party companies (through a variety of business models: subcontracting, use of temporary agencies and labour brokers, franchising, licensing, etc.) or, more troubling, to individuals who are treated as independent contractors”.*

Multiplying parties providing more and more narrow tasks and services in the productive process clearly implies a detrimental impact on the intermediated workforce. When the legal compliance is shifted, the workforce becomes vulnerable to violations of even the most basic law protections. Workers at the bottom of fissured business models receive low wages, more contingent emplo-

yment, no benefits, and insecure employment, and suffer breaches of labour standards and health and safety protections, a greater injury risk exposure, and a weakened collective bargaining leverage given the business volatility and the (general) poor brand image and financial consistency. Working at the last rings of the contractual chain means not only accepting lower protection and instability within the employment relationship, but in some cases also being subject to the imposition of a different qualification, and subsequent treatment, as self-employed, with a step back of guarantees, and an unfair increase of earnings inequality. No judicial option is feasible at that stage, being blackmailed to work prevails and forces a resigned acceptance.

The extremely negative pattern of this business model is that the main purpose of the organizational restructuring business is to reduce the labour force's pay, protections, benefits, and access to longer-term career opportunities, thus the social costs of those actions are borne by others. Getting rid of employment constraints, on the one hand allows companies to maximise the revenues, given that it is much easier to face a bargaining with a contractor or subcontractor in lieu of a trade union or a work council; on the other hand turns unexpected, or not primarily set, labour costs (salary, HR management, litigation, industrial disputes, public inspections) into fixed services prices which are resistant to the most common market changes and represent a reliable framework to develop the acquired business. Of course, these experiences do not always succeed in a complete outsourcing of employment issues and problems; sometimes, when the work exploitation is extremely severe, the consequences of social standards violations fall on the principal/owner who may be convicted to reinstate or hire the subcontractor personnel, compensating the damages and losses suffered by the workers. At the same time, even more in the present social network era, leading companies are exposed to a high reputational risk for labour discriminations, misconducts and offences committed by subcontractors. So, they cannot ignore what happens in their productive chain and sites, because a growing portion of customers are keen on ethical issues and choose only products which are made in a compliant way with social standards.

Along with this phenomenon comes the inception and spread of platform providers. Companies offering goods or services through online platforms bypass the traditional distribution network by keeping in touch directly with the customer or user. The model requires a high flexibility and adaptation of the supply which is provided by gig-workers. The worker will be hired only when

someone orders a product or service and is dismissed (or stops getting paid) immediately after. These short-term engagements maximise the business profit (the company pays workers only when it needs) and displace the business risks to the workers who bear the inactivity costs and who are personally responsible for the diligent and timely execution of the services. In addition, if something goes wrong, they might receive worse reviews or feedback. This, in turn, might have severe implications on their capacity to work or earn in the future as the possibility to continue working with a particular app, or to find better-paying jobs on crowdsourcing platforms which are strictly dependent on the rates and reviews of past activities. In the meantime, gig-workers are mostly classified as independent contractors, even if their activities are pervasively controlled and monitored by the platform owners, on the assumption that they are free to accept or not an assignment and they decide autonomously how to perform the tasks and when being available for job. This allows platforms to discharge any social obligations towards their personnel, who is not entitled, except for specific protecting measures adopted by single States, to be granted by minimum wage laws, social security contribution, anti-discrimination regulation, personal data protection, sick paid leaves, holiday, and sometimes even freedom of association and collective bargaining, which is constitutionally acknowledged only to subordinate workers or to bogus self-employed persons, not to independent contractors.

Now breaks into the above-described scenario, itself very deconstructive for labour law, the technological revolution of AI and algorithms, which emphasizes the trends towards individualisation, de-unionisation and decentralisation of collective agreement. The core question is: how to protect workers' rights during the digital age? Is it better to dismantle the standard employment contract and construct in its place a broader foundation of economic security for all as somebody proposed, or is it better to move with great precaution towards an updating of concepts and definitions, keeping in force the actual system of protection with some limited revisions?

First, we may clear up that the answer is not influenced by the personal beliefs on the substitution rate machine v. human that is reasonable to expect in the next future. There is no doubt about the possibility of human replacement by machines in a lot of job positions involving low-skilled, but even high-skilled, professions. We are all aware after Harari teachings, that economic growth will not solve technological disruption and that billions of people will be pushed

out of the market in the next future by the technological revolution, since AI will compete with humans against neural networks in calculating probabilities, recognizing patterns, and taking consequent decisions. Differing from the past industrial revolutions, the ongoing tech revolution involves not only physical but also cognitive typical human skills, and that is the reason why it will be more disruptive and result in greater job cuts than the precedents. At issue is the real dimension of jobs creation, how the market will react to the job destructive impact of new technologies, how the people will manage the stress of job volatility, and how Public Institutions will satisfy the massive needs for permanent learning since almost everyone will not perform the same profession for his/her entire life.

Nobody knows the future, but even the authors who predict a huge replacement of humans by machine learning robots, with permanent high unemployment rates and shortage of skilled labour, date the event by 2050. Given that it is worthwhile for policy makers to anticipate the trends and mitigate the impacts, slowing down the pace of automation and offering transitory solutions to the new arising problems, at the current time the analysis should be focused on the actual situation and not be affected by a subjective, so far not generally agreed on, prediction on the future development of labour markets and business models. In other words, it is useless, and even counterproductive, taking into account the threat, not yet proved³⁸, that job losses could in the future outstrip job creation, i.e., the jobs absorbed by tech innovation are only in small portion compensated by the new jobs related to AI (designing, maintaining, implementing, supporting) and by a consumer surplus stemming from the productivity gains and cost savings of automation. What we are expected to do is try to give a solution based on the present organizational framework, not to make a proposal built on an imaginary forthcoming scenario which does not yet exist (although represented by the fascinating concept of 'post-work world'). In doing so we fully endorse the ILO's purpose to construct an after-pandemic world marked by more global cooperation, with better social governance, with the voices of all stakeholders being heard.

38 In the same way, Richard Freeman believes that technology has already contributed to a historic shift in the distribution of income over the past two decades toward robots/capital and against labor, but he expects technology to affect wages more than employment: "*The 'iron law' of the effect of robots on pay is that increased substitutability with human skills puts downward pressure on the wages of persons doing competing tasks - a pressure likely to grow in the future as technology improves the competence of robots and lowers their cost*".

5. THE CLASSIFICATION ISSUE

The main challenge to labour law arisen from the automation spread and work fissuring is the qualification issue. In most countries the labour protection is restricted to employment relationships, and it is built around the subordination paradigm. The legal model consists in a mix of both private and public regulation that protect the individual's freedom to participate in an employment relationship and ensured key protective minimum working conditions and social benefits. It does not simply regulate the exchange of work and remuneration, but in readdressing the inherent asymmetries in power between the employer and the employee, it serves as a gateway to a protection granted by law. The typical purpose of labour law is to provide rules which limit the scope of autonomy of the parties involved, offering a set of rights for the employees – and accordingly, a set of statutory duties for the employer – that can be effectively enforced.

Succeeding to bypass the binding model means for the enterprises huge savings of labour costs (i.e., the discrepancy in payment wedge could reach up to 40%!). This justifies the continuing entrepreneurial attempts to escape from the regulatory framework of an employment relationship, both stressing on the autonomy and self-coordination of the work done and offshoring labour costs. The legal reaction was addressed to set up a more comprehensive and up-to-date notion of subordination which can take due account of the factual changes in labour relations. Indeed, labour relations have lost the hierarchical-top-down approach to fade towards structured relational network model, managed through apps, which develop according to schemes in which the intelligent collaboration is inspired by less subjection and greater sharing of the worker. In this respect, most national legislations and/or national courts have shifted the core of subordination from the hetero-direction criterion to the hetero-organization test, which means that all workers that have been proved to be subjected to strict time and space hetero-coordination are included into the protected category, even if they are not under specific directions on the way they perform the job. Besides, the work is getting more creative, horizontal, and collaborative with added value for companies, insisting on the traditional concepts of hierarchy, discipline and standardized tasks would have constrained the labour rights scope of application into such a narrow area to become irrelevant for social justice and wellness.

The changing process of subordination paradigm still has two problems to deal with: i. In an enlarged inderogable notion of subordination, how can the parties' contractual willingness to conclude an autonomous agreement be preserved, flowing out of a genuine self-employed relationship? ii. Given that the managerial powers are shifting, at least in part, from humans to algorithms, how does this circumstance affect the classification issue? How can workers be safeguarded from pervasive control and monitoring? On the one hand there is a need to find a balance between opposite, genuine interests, on the other hand there is a need to avoid abuses. So, the reference revised notion should be, at the same time, on different grounds, more restrained and more inclusive.

As it is clear that the parties' bargaining power is valued by having regard not to the label of the contract but to all factual circumstances, to establish whether the worker is an independent contractor, the factors should be: a) the worker must be free from the control and direction of the hirer in relation to the performance of the work, both under the contract and in fact; b) the worker must perform work that is outside the usual course of the hirer's business; c) the worker must be customarily engaged in an independently established trade, occupation, or business of the same nature as the work performed for the hirer. If the control test and the integration in the organization test are quality tests based on certain degrees of recurrence, the trade test is structured in a binary mode (yes/no), thus it comes before the other two. Does the performer genuinely operate a business on his or her own account? If the answer is yes, then the test moves on the way of doing the job and on the relation between the working activity and the employer's business scope, considering whether the principal supplies working instruments, tools, and the place of work. But if the response is no, then there is no room for independent contractor qualification. In any case the evaluation must respect the parties' effective will and not go beyond their interests and purposes as expressed in the practical activity execution. Contractual frauds and abuses are banned, but only after a detailed scrutiny of existence.

So far, the employee was identified as a person who agrees to work under the direction and control of the employer, who – as a legal effect – has the power to issue orders and directives, to control how they are carried out and to sanction non-compliant behaviours. As above mentioned, the direction turns into hetero-organization and monitoring, and the sanction is construed in a broader sense which encompasses every negative impact on worker's financial sphere not limited to disciplinary actions. But the current point is: does it

change anything if the supervision is run by an algorithm which determines an effective and efficient searching, matching, scheduling, and allocation of work and of levels of remuneration?

The AI and the relative algorithms, not only in platform companies as reported above, have taken over the managerial powers of production and working organization and control, given their better performance in managing a huge quantity of data. The technological environment is nevertheless planned and coded by the company which defines settings and outputs for the machines to be arranged and implemented. It is the company that inspires the use of the tech tools, which are not neutral, not objective, not unchangeably set-up, and not powered by an autonomous will. So, the digital environment, even if there is no human beyond its productive or distributive choices, giving instructions and exercising control over the working activity, represents the *longa manus* of the employer, and can be scrutinised for any reason relating to the labour relation, including for classification purpose. This means that the worker should be authorised to have access to the algorithms governing the performance of his/her job to prove to be subjected to directives, organizational inputs, monitoring, and/or punitive practices. They are sensitive company information but, in respect to confidentiality obligations, should be shared with workers' representatives and to the interested party who has brought a judicial action against the firm. The worker, and the judge in his qualification assessment, should be fully aware of the organizational context in which the job is performed. The context is formed by the evidence (exterior options available) of the app that drove that worker, but also by the algorithms and neural networking which oversee the app. In the coding lies all the necessary information about the purposes and the way to achieve them set up by the company.

Some national Courts in Europe have already stated the discriminatory nature of app/software that does not consider the absence from platform work justified due to a strike participation or a medical treatment. If the tech tool is coded to giving a priority to the more reliable workers in future working session self-service booking, if the reputational score of the workers is gained on the rate of workers' timely connections to the platform, if the system does not exclude from the degree of participation any just cause related to individual performance impossibility, and if the priority given determines not only a shift in reducing selection but also a relevant shrinking of hourly slots for the lower ranking workers, then the app is unlawful for discriminatory reasons and the

worker is entitled to be treated as an employee and/or to be compensated for earnings losses and for health damages. The so-called ‘opacity of automatic decision assistance systems’ is no longer sufficient to protect companies and relieve them of their responsibilities towards workers. In a classification or discriminatory lawsuit, the burden of proof relating to the intensity level of organizational imposition led by the infotech is shifted from the claimant to the respondent who must disclose the intime structure and coding to avoid presumptions, functional to the applicant defence. If the respondent fails to give a complete coding description or decides not to make such a disclosure, then he cannot invoke a confidentiality principle to underpin his conduct. The balancing between freedom of economic initiative and social fundamental rights leans in this case to the second, due to the principle of proximity to the proof and to the fact that giving evidence of the coding contents might be a diabolical proof for the worker. After all, reversing the burden of proof on the employer rather than on the employee where employment status is in dispute, has already been experienced in some western legal systems which impose a prior allegation duty to the employer.

Enlarging the scope of application of subordination to encompass new features of work dependency in the digital environment or strengthening the regulation of nonstandard employments (casual work, temporary work, zero hours contracts, fixed-terms contracts) are not the only countermeasures adopted by national laws to avoid employers’ misclassifications. To ensure protective regulation and worker unionization, preventing a competitive advantage by shifting all risks into workers to breaching companies, some countries (e.g., Spain, England, Germany, Italy), in different ways, have introduced a new legal form of relationship placed between employment and self-employment. The so-called *tertium genus* model aims at giving a fixed degree of protection to workers who stand in a “grey zone”, and even if they have in some respects freedom of performing jobs, they work within an organized service unilaterally determined by the employer who prohibits to contact clients “autonomously” or saving their personal data or serving other contractors. These workers may share characteristics of the self-employed (e.g., they can choose when and where to work; they use their own equipment); but they may also share some characteristics of employees (e.g., they cannot set their own rates of pay, they cannot be replaced in executing their tasks by someone else, they may have to wear a uniform, they are engaged by a single client).

The challenges for policymakers are to identify the workers in the “grey zone” detecting the eligibility criteria of “dependent” or “employee-like” self-employed and decide which social standards should be extended to them and how. The last aspect is the most controversial one. It is widespread to provide those workers with minimum standards of pay, holidays, accident and pension insurance schemes, exemption from the antitrust regulations and the right of association and collective bargaining. On the contrary, it is disputed, and taken on a State-by-State basis, how to grant these protections, if simply extending the subordinate workers’ rules or providing devoted rules, produced by legislative acts or collective agreements or, in a binding precedents common law system, judgements. In any case, the introduction of such a third working category could be useful to defuse the all-or-nothing disciplinary alternative and to set up a supplementary tool which keeps working relations in the declared jobs framework without affecting the persisting reference contract of (standard) employment.

The digital worker should refer to an employee who cooperates in the achievement of the productive aims of the enterprise, against salary and safety, but also, more widely, of a full “recognition” of his essential role in business activity and the consequent enhancement of his skills and abilities. Mutual recognition, of the enterprise by the worker, and of the worker by the enterprise, has become a key factor in the automatised producing system in the meaning that the human contribution is fundamental to reach high productivity and it is still typically depicted within a subordinate relationship. Joining a more collaborative or mutually determined workplace in which workers have to take initiative themselves and build up their own role based on creativity and expertise, should not represent an alibi to escape from standard employment, given the fact that labour integration into the firm’s digital operations has been boosted and the monitoring of individual performance has considerably increased its intensity and quality too. The fact that standard employment has been reshaping in the principal figure of authority and dependency due to the new empirical layout where workers are free to plan their work but in a hetero-organised and strictly controlled environment, does not mean leaving the classical trade off ‘subordination’ and ‘protection’ which is more timely than ever given the growing information asymmetry within the workplace. The traditional protective model founded on the social contract is still resilient to technological changes and should be our steady benchmark.

6. DIGITAL MONITORING, EMPLOYEE'S PRIVACY, AND TIME'S POROSITY

As described above, the means of control over working performance coming from AI applications and tools are getting more pervasive and deep day by day. This augmented monitoring is difficult to challenge in a social protection perspective because of the expanding permeation between professional life and private life³⁹. The main purpose of employment privacy regulation is getting aside the employer from every worker's information or personal data which is not strictly relevant to the job performing and which is not required for employment contract execution or asked by Public Authority (e.g., Inspectorates, Health and Safety Institutions, Social Security entities). In any case, processing employee's data is prohibited to the employer if it is exercised not in a transparent, accurate and adequate manner, or in a manner that is incompatible with the legitimate purposes assumed, or in a manner which permits identification of data subjects (workers) for no longer than is necessary for the purposes for which the personal data are processed. The explosion of remote working and social networking has blurred the line between home and work, so in many cases it is extremely hard to detect whether the information lies in a personal sphere or becomes of business interest. The human digital relations, and consequent information, are so disseminated and tied together to make it nearly impossible in practice to make a distinction between what is restricted to individual uses and what is functional to entrepreneurial aims. Workers profiling and recruiting tools, which are automated forms of personal data processing, consisting of the use of personal data to evaluate certain personal aspects relating to a natural person, "*in particular to analyse or predict aspects concerning that natural person's performance at work, economic situation, health, personal preferences, interests, reliability, behaviour, location or movements*" (art. 4, Regulation (EU) 2016/679, in short GDPR), became lawful if they are conducted in a pertinent, proportionate and adequate way, and they have been object of meaningful information to workers about the logic involved, as well as the significance and the envisaged consequences of such processing.

The *ratio* of protection techniques adopted in Europe and in other Western Countries is clear: the capacity of infotech to gather personal information

39 You may think, for example, at the comments or reviews or opinions delivered by the employee in social networks: could they be judged for termination by the employer when they are issued on private accounts and are not related to the company? It should not be forgotten that these data are protected under the human right of freedom of expression.

‘on air’ is impressive and cannot be banned by legal regulation, since it took it too far. Thus, it is worth setting substantial conditions of exercising, that could guide the processing to a better interests’ balance, and procedural informative conditions that could lead to a better understanding on what’s going on in the enterprise by a meaningful overview of the intended processing. The right to be let alone has given way to the right to develop one’s social identity, which means that every worker has the power not to prevent the employer from using personal data but to prevent the employer from using personal data in a manner that could distort employee’s identity and alter the common perception of the person in the reference community.

On the other hand, in the most powerful states (USA and China for all) data concerning jobs performance and all the activities done in the workplace are considered the employer’s property and there is no expectation of privacy. The collection and processing of those data is always lawful, at least until it infringes on a specific binding provision (e.g., discrimination law or competition law). A different approach was followed by the European countries which prohibit the control over the jobs performing done through digital tools, unless the monitoring is stemming from the working tools, i.e., from the common devices used to carry out working tasks, or from the legitimate purpose of meeting objective needs such as organizational / productive requirements, protection of company’s assets, protection of employees’ health and safety, employer’s judicial defence. A right to privacy is granted, but it is evident that it stands as a general principle more than an effective operating rule due to the wideness of the exemptions and the ubiquity of infotech.

Furthermore, automated individual decision-making within the workplace is permitted even in European Countries, though under some imperative conditions regulated by art. 22, GDPR: “1. *The data subject (i.e., the worker) shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her.* 2. *Paragraph 1 shall not apply if the decision: (a) is necessary for entering into, or performance of, a contract between the data subject and a data controller; (b) is authorised by Union or Member State law to which the controller is subject and which also lays down suitable measures to safeguard the data subject’s rights and freedoms and legitimate interests; or (c) is based on the data subject’s explicit consent.* 3. *In the cases referred to in points (a) and (c) of paragraph 2, the data controller shall implement suitable measures to safeguard*

the data subject's rights and freedoms and legitimate interests, at least the right to obtain human intervention on the part of the controller, to express his or her point of view and to contest the decision". Given that the worker's consent is quite easy to acquire, at least at the beginning of the employment relation, and given that it is very simple to demonstrate the nexus between automated decision-making and hiring process or jobs performing, the worker's protection against errors committed by the algorithm is restricted to the possibility of having voice in the automated choice. It has been recognized as a right to human interaction, i.e., the possibility for workers affected by a wrongful decision taken by machine to challenge that decision before the human functionally responsible for that automated process, pretending a response to their complaint.

The response may be comprehensive of the logic beyond the algorithm, but it may also be limited to the visible outputs, depending on the existence of a disclosure willing and based on whether the employer owns (or not) the coding. Criteria of evaluation should be transparent and known to workers, and to ensure avoidance of arbitrary or discriminatory outcomes. To this end, even if it were possible to have automatic changes and updates in the operation of algorithms through self-learning artificial intelligence, the final assessment should be questionable by workers before a human (manager) who is compelled to give an accurate response to the file brought out. In any case, if the response doesn't fit the grievance, it could be challenged before Labour Courts as any other human decision pertaining the employment relationship, with the advantage for the claimant of a partial reverse of the burden of proof in analogy to what happens with the classification disputes.

As digital surveillance becomes ever broader, albeit in European countries it should be respectful of legitimate purposes, proportionality, and security principles, paradoxically the control over working time has declined, but it is only an apparent paradox. The rules on working hours and their respect are based on the industry work model; they cannot suit the new forms of work organisation, linked to the intensive use of digital devices, automated decision-making processes and remote working. The transformation of the employment relationship in a cooperative and project-oriented way – the workers are asked to craft the content of their work, to determine their own working time, to use digital devices for business aims "anytime, anywhere" – determines an evaluation of work which is not dependent on the amount of time spent on professional's duties, but to the results and achievements stemming from the employee's

activity. This trend has two effects: one, positive, to give to the worker more time and space flexibility to do the job, the second, negative, to blur the line between leisure time and working time, enlarging the employee's exposure to company needs. Digital tools can create an absence of working limits, leading to excessive interference in the private lives of employees. The phenomenon has been called 'time's porosity', to stress the fact that working time has widened its meshes while embracing almost the entire active worker's life.

To overcome mental diseases, the risk of burn-out, and preserve both the employee's integrity and the enterprise's productivity, some European countries (e.g., France and Italy) have experienced the right to disconnect, which is the right to refuse to respond to work-related communication outside of working hours. Employees should not be expected to field work calls and emails, or communications with their bosses, outside of working hours. Providing such a legislative right is a reasonable measure, but it is not sufficient in practice to escape digital invasion and protect against an information overload with bias on psycho-social well-being. What is necessary is strengthening the implementation and the enforcement of the right through collective agreements signed at plant or company level. Collective bargaining, at the closer stage to the workers, might be engaged at the same time in "negotiating the algorithm", which means union representatives co-determining or simply being informed about the digital processes governing the work organization, and negotiating the forms and ways to efficiently exercise the right to disconnect, putting in place the appropriate instruments to empower its application (e.g. creating a bipartite commission, launching informative campaigns for workers and managers, setting up a complaint procedure and/or a grievance procedure for settling disputes, and so on). Collective bargaining can also be essential by introducing either a collective right of information and consultation on infotech organizational matters or an individual right to lifelong training for workers to better face the use of new machinery and the need to be transferred to other tasks or occupations in case where their jobs will be displaced by automation.

The legislative or contractual provisions relating to the right to disconnect are not the only provisions tackling time's porosity. Some other actions have been brought to contain a negative impact of being constantly 'on call'. On the side of illness prevention and recovery, counselling and medical services have been provided and financed by the firms as well as compensatory leave, rest, or holidays. On the side of payment of non-managers' overtime, special

indemnities have been added to standard salary to reward the wider overall working availability or the single supplementary working time units. On the side of private life control, given, as we above referred, the factual impossibility of non-recording personal data by companies' digital tools, have been disciplined collective (information) and individual (interaction) rights aiming to limit processing operations for legitimate purposes and to supervise and orient data storage and selection. It is true that *“the traditional idea of working time and workplace, or the fact that they coincide, is left behind”*⁴⁰. In order to bridge the gap produced by technology innovation, some regulatory steps have already been experimented with, and some others are nearly to come, hopefully also in emerging countries.

7. CONCLUSIVE REMARKS. SOCIAL REGULATION AS ANTIDOTE TO GLOBALIZATION INEQUALITIES

We believe, along with S. Deakin and M. Markou⁴¹, that *“legal evolution, not deregulation, is the way forward for labour law”*. If it's true that labour costs stemming from employment laws are among the factors that lead firms to fissuring work, automate jobs and replace people, it is equally true that social fundamental rights are granted at international constitutional level and cannot be bypassed, even temporarily, because of the spread of an economic worldwide crisis⁴². We should always find an equitable balance between freedom of enterprise and social rights to make the economic growth sustainable and to allow labour protective rules and Institutions to effectively influence economic processes, including the ones triggered by new technologies. The actual labour law tendencies towards deregulation, deinstitutionalization, and individualization have to be countered to resist the market pressure, keeping on implementing a fair developing model based on social cohesion, equal labour standards, and dignity at work. The way has been clearly paved by ILO in the recent (2019) Centenary Declaration for the Future of Work and it is focused on the promotion of a human-centred approach to the future of work, *“which puts workers' rights and the needs, aspirations and rights of all people at the heart of economic, social and environmental policies”*.

40 Hendrickx F. (2019), p. 376.

41 Deakin S., C. Markou C., 2018, p. 17.

42 V. De Stefano V., 2018, p. 24.

The Century ILO Declaration, adopted at the 108th International Labour Conference, following the ILO Declaration on Fundamental Principles and Rights at Work (1998) and the ILO Declaration on Social Justice for a Fair Globalization (2008), draws the roadmap of ILO's action in defending and reshaping labour law for the next Century. “*The ILO must direct its efforts to: (i) ensuring a just transition to a future of work that contributes to sustainable development in its economic, social and environmental dimensions; (ii) harnessing the fullest potential of technological progress and productivity growth, including through social dialogue, to achieve decent work and sustainable development, which ensure dignity, self-fulfilment and a just sharing of the benefits for all; (iii) promoting the acquisition of skills, competencies and qualifications for all workers throughout their working lives as a joint responsibility of governments and social partners*”. These guidelines are filled with the principal ingredients for Member States, Social Partners and International Organizations to make good recipes in striking the balance between labour and capital interests in the digital world. It is, in particular, reaffirmed that “*All workers should enjoy adequate protection in accordance with the Decent Work Agenda, taking into account: (i) respect for their fundamental rights; (ii) an adequate minimum wage, statutory or negotiated; (iii) maximum limits on working time; and (iv) safety and health at work*”.

Some criticisms have been made to the provision from the labour side⁴³. Even if future improvements are welcome to the purpose of strengthening decent work and sustainable development, we must bear in mind that the provision is the result of a compromise taken in the tripartite Conference, and responds to the different sensitivity, values, and practice existing within the Member States. Furthermore, most objections seem to be more formal than substantive (e.g. the lack of an express recognition of the lifelong learning right or the missing elevation of the right to occupational health and safety (OSH) at the workplace to the rank of fundamental principle at work), while the main criticism concerning the scope of application of fundamental rights (in the final version of the Declaration has been erased the specification “*all works regardless of their employment status or contractual arrangements*”), can be overcome by stressing the fact that the provision refers to the concept of worker, not to the one of employee. This means that the recipients of the granted protections might be all the people who perform a job in a dependent way, either employees or dependent self-employed. Consequently, the decent work category, and its typical

43 Potocka-Sionek N., Aloisi A., 2021, p. 27.

normative protection (fundamental rights, adequate minimum wage, working time limits, safety and health at work), is not reserved to subordinate workers, but it is open to all workers who are economically dependent on their contractor. The scope of application of the fundamental social standards must lie on the worker's material position and needs, not on a conventional qualification of subordinate worker.

The ILO route towards decent work for all engaged in a relationship with a dominant and imbalanced counterpart was officially enshrined by the Declaration which calls on national governments and social parties to respond to challenges and opportunities relating to the digital transformation of work, including platform work. It's now up to the Member States to face the challenges, adapting the rules, enforcing the compliance, strengthening the Inspections Authorities, i.e., investing in a renewed regulation and in renewed institutional instruments which are, at the same time, compatible with the ongoing process of supply chain globalization but also in line with the social values, universally stated. It is a government's duty, coming from the association to international bodies, to build up new constructive policies, inspired by the international guidelines and provisions and rejecting any disruptive approach, not consistent with the fair balancing of opposite rights, both equally worthy of protection. The new national policies, far from dismantling the "*fortress of employment-based rights and benefits*", might tend to update the notion of subordination, expand the social fundamental rights to all economic dependent working relations, promote investments in job training and in job creation, reduce the phenomenon of working poors, experiment forms of guaranteed income support, such as the universal basic income, introduce forms of individual and collective information on, and participation to, the organizational model management, promote job sharing through reduced hours and weeks of work, subsidize universal basic social services (education, transport, healthcare, etc.).

Workers still need legal protection against commodification and exploitation. They should rely on imperative provisions and on union representatives, enabled to act as recognized intermediaries and holders of a full collective bargaining power. But, given the fact that international rules are not binding in horizontal relationships within each Member State, so workers cannot plead them before Courts if they are not yet ratified and implemented through domestic laws, the tension towards the renewed regulative approach might be shared and pursued by most Countries to be effective. As we have seen, the companies

and the markets are largely transnational, as well as the social provisions might be adopted by many States to become a common rule, avoiding social dumping and in fraud practices. The only way to gain this goal is making every possible effort in cooperative and multilateral channels to push the implementation of the ILO joint regulative framework by most Countries.

Ensuring social standards is an ethical matter in the first instance, but it has also become an economic imperative. The raising of the labor floor of rights throughout the world is the best antidote against the model of market globalization and productive offshoring based only on labor's cost cuttings. At the same time the increased use of robotics and other automation technologies could partially bridge the gap between more and less industrialized countries, reducing the distance and encouraging companies from emerging countries to compete and find their own operational fields. It is well-known that the possession of big data and the capacity of quickly processing them give to the owners the lion's share of the market (and this is the reason why there are proposals on the ground to tax leading corporations controlling the algorithms or to compel them to freely share part of their big data), but it is also quite clear that digital innovation continuously changes organizational and industrial processes, feeding new demands for products and services and requesting appropriate supplies. New sectorial untapped markets will be opening, and this represent an extraordinary chance for emerging countries to boost their economy while assuring an adequate standard of living for their employees. It's time to extend the European model of a sustainable and equal growth and to support every international effort in the direction shown by ILO: *"to promote policy coherence in pursuit of its human-centred approach to the future of work, recognizing the strong, complex and crucial links between social, trade, financial, economic and environmental policies ... Such a future of work (A/N with full, productive and freely chosen employment and decent work for all) is fundamental for sustainable development that puts an end to poverty and leaves no one behind"*⁴⁴. For a bright future of the work, and for a better living for all, we cannot miss this target.

44 ILO Century Declaration, 2019, p. 9.

BIBLIOGRAPHY

- ACEMOGLU D., RESTREPO P., *Automation and new tasks: how technology displaces and reinstates labor*, Journal of Economic Perspectives, Vol. 33, Fasc. 2, 2019, pp. 3-30, <https://pubs.aeaweb.org/doi/pdf/10.1257/jep.33.2.3>;
- AGRAWAL A., GANS J.S., GOLDFARB A., *Artificial Intelligence: The Ambiguous Labor Market Impact of Automating Prediction*, Journal of Economic Perspective, Vol. 33, Fasc. 2, 2019, pp. 31-50;
- ALOISI A., DE STEFANO V., *Essential jobs, remote work and digital surveillance: addressing the COVID-19 pandemic panopticon*, International Labour Review, 2021, pp. 1-31, <https://doi.org/10.1111/ilr.12219>;
- ARNTZ, M., T. GREGORY AND U. ZIERAHN, *The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis*, OECD Social, Employment and Migration Working Papers, No. 189, Paris, 2016, <https://doi.org/10.1787/5jlz9h56dvq7-en>;
- BANCA MONDIALE, *The changing nature of work*, World development report 2019, Washington DC, 2019, pp. 1-151, <https://www.worldbank.org/en/publication/wdr2019>;
- BARBATO M. R., *Provvedimenti in materia di lavoro adottati in Brasile per contrastare l'emergenza da Covid-19: un'analisi critica*, in Il Diritto del Mercato del Lavoro, No. 1, Napoli, 2021, pp. 173-202;
- BELLOMO S., PERULLI A. (Eds.), *Platform work and work 4.0: new challenges for labour law*, Milano, 2021, pp. 1-224;
- BERG J., FURRER M., HARMON E., RANI U., SILBERMAN M. S., *Digital labour platforms and the future of work - Towards decent work in the online world*, International Labour Office, Geneva, 2018, pp. 1-160, https://www.ilo.org/global/publications/books/WCMS_645337/lang--en/index.htm;
- BENNATO A., *Il ruolo dei team nell'industria 4.0*, in CIPRIANI A., GRAMOLATI A., MARI G. (a cura di), *Il lavoro 4.0. La Quarta Rivoluzione industriale e le trasformazioni delle attività lavorative*, Firenze, 2018, pp. 3-17, https://fupress.com/archivio/pdf/3559_14079.pdf;
- BOLEGO G., *Intelligenza artificiale e regolazione delle relazioni di lavoro: prime riflessioni*, Il lavoro nel diritto, No. 1, 2019, pp. 51-67;
- BRYNJOLFSSON E., MCAFEE A., *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*, New York, 2014, pp. 1-304;
- BURDIN G. ET AL., *Why using technology to spy on home-working employees may be a bad idea*, LSE Blog, 17 June 2020, <https://blogs.lse.ac.uk/businessreview/2020/06/17/why-using-technology-to-spy-on-home-working-employees-may-be-a-bad-idea/>;
- BUTERA F., *Lavoro e organizzazione nella quarta rivoluzione industriale: la nuova progettazione socio-tecnica*, in L'Industria, No. 3, 2017, pp. 1-17, <http://www.ervet.it/wp-content/uploads/2017/10/Industria-4.0-Articolo-per-L'Industria.pdf>;

- CARINCI F., PIZZOFERRATO A. (a cura di), *Diritto del lavoro dell'Unione Europea*, Torino, 2021, pp. 1-519;
- CARUSO B., DEL PUNTA R., TREU T., *Manifesto per un diritto del lavoro sostenibile*, Centre for the study of European labour law "Massimo D'Antona", 2020, pp. 1-96, http://csdle.lex.unict.it/Archive/AC/Webliography/Blogs/20200521-032536_Manifesto_Caruso_Del_Punta_Treupdf.pdf;
- CASALE D., *La tecnologia nella gestione della previdenza pubblica: telematizzazione degli archivi contributivi e diritti individuali dei lavoratori*, in DA SILVA VEIGA F, PIRES FINCATO D. (diretores), GONÇALVES R. M., DE BRITO P. (coordenadores), *Estudios de direito desenvolvimento e novas tecnologias*, Porto, 2020, pp. 9-23;
- CASANO L., SEGHEZZI F. (a cura di), *Le trasformazioni del lavoro: un percorso di lettura*, Bologna, 2021, pp. 1-205;
- CASTELLANO N., LETO L., *Implementazione di sistemi di misurazione delle performance nelle PMI: elementi di analisi nella prospettiva del cambiamento organizzativo*, in *Management Control*, No. 1, Milano, 2021, pp. 129-150;
- CHARBONNEAU K., EVANS A., SARKER S., SUCHANEK L., *Digitalization and Inflation: A Review of the Literature*, Staff Analytical Notes, Bank of Canada, 2017, pp. 1-17, <https://www.bankofcanada.ca/wp-content/uploads/2017/11/san2017-20.pdf>;
- COLCLOUGH C., *Workers' rights: negotiating and co-governing digital systems at work*, 2020, <https://socialeurope.eu/workers-rights-negotiating-and-co-governing-digital-systems-at-work>;
- CONFORTI L., *"Breque dos App's": greve ambiental e direito de recusa dos entregadores por aplicativos*, in *Plataformas Digitais de Trabalho - Aspectos Materiais e Processuais*, Brasilia, 2020, pp. 97-114, https://www.anamatra.org.br/images/publicacao/enamatra/publicacao_PlataDigTrabalho_web.pdf;
- COSTANTINI F., *Profilazione e "automated decision making" in ambito lavorativo nella giurisprudenza italiana*, *Il Lavoro nella giurisprudenza*, No. 11, Milano, 2019, pp. 984-995;
- CRISTADORO R., (a cura di), *Una nuova rivoluzione industriale?*, Dipartimento di Economia e Statistica, No. 1, 2019, pp. 1-15, https://www.bancaditalia.it/pubblicazioni/focus-on/2019/FocusOn_1_2019.pdf;
- DAGNINO E., *Dalla fisica all'algoritmo: una prospettiva di analisi giuslavoristica*, Fondazione Adapt, 2019, pp. 1-208;
- DAUGAREILH I., DEGRYSE C., POCHEP P. (Eds.), *The platform economy and social law: key issues in comparative perspective*, Brussels, 2019, pp. 1-136;
- DAZZI D., *Gig Economy in Europe*, *Italian Labour Law e-Journal*, Vol 2, Fasc. 12, 2019, pp. 67-122, <https://doi.org/10.6092/issn.1561-8048/9925>;

- DE LACERDA CARELLI R., CAVALCANTI T. M., PATRIOTA DA FONSECA V., *O Futuro do Trabalho: efeitos da revolução digital na sociedade*, Brasília, 2020, pp. 1-473, <http://escola.mpu.mp.br/publicacoes/obras-avulsas/e-books-esmpu/futuro-do-trabalho-os-efeitos-da-revolucao-digital-na-sociedade>;
- DE STEFANO V., “*Negotiating the algorithm*”: *automation, artificial intelligence and labour protection*, ILO Working Paper No. 246, International Labour Organization, Geneva, 2018, pp. 1-41, https://www.ilo.org/wcmsp5/groups/public/---ed_emp/--emp_policy/documents/publication/wcms_634157.pdf;
- DEAKIN S., MARKOU C., *The law-technology cycle and the future of work*, University of Cambridge Faculty of Law Research Paper No. 32/2018, pp. 1-26;
- DELFINO G. F., VAN DER KOLK B., *Remote working, management control changes and employee responses during the COVID-19 crisis*, Accounting, Auditing & Accountability Journal, Vol. 34., Fasc. 6, Bingley, 2021, pp. 1376-1387, <https://www.emerald.com/insight/content/doi/10.1108/AAAJ-06-2020-4657/full/pdf?title=remote-working-management-control-changes-and-employee-responses-during-the-covid-19-crisis>;
- DELL K., NESTORIAK N., *Assessing the impact of new technologies on the labor market: key constructs, gaps, and data collection strategies for the Bureau of Labor Statistics*, Washington DC, 2020, pp. 1-72, <https://www.bls.gov/bls/congressional-reports/assessing-the-impact-of-new-technologies-on-the-labor-market.htm>;
- DEVETZI S., STERGIOU A. (Eds.), *Social security in times of corona - a legal comparison of selected European countries*, Athens, 2021, pp. 1-201;
- DI MARTINO V., *Telelavoro. La nuova onda*, Il Mulino, No. 2, Bologna, 2020, pp. 159-177;
- DI NUNZIO D., *Flessibilità e digitalizzazione del lavoro: forme organizzative, condizioni e soggettività*, Scientific Journal on Digital Cultures, Vol. 3, Fasc. 3, 2018, pp. 125-138;
- ESTLUND C., *What should we do after work: automation and employment*, Yale Law Journal, Vol. 128, Fasc. 2, 2018, pp. 254-327;
- EU COMMISSION, *Communication from the Commission to the European Parliament, the European Council, the Council, the European Central Bank, the European and Social Committee, the Committee of the Regions and the European Investment Bank 2020 European Semester: Country-specific recommendations*, 2020b, pp. 1-19, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0500>;
- EU COMMISSION, *Rappresentanti dei lavoratori 4.0 - Il Manuale*, Progetto SUNI - Smart Unions for New Industry, 2019, pp. 1-29, <http://www.bollettinoadapt.it/rappresentanti-dei-lavoratori-4-0-il-manuale/>;

- EU COMMISSION, *Telework in the EU before and after the COVID-19: where we were, where we head to*, Science for Policy Briefs, 2020a, pp. 1-8, https://ec.europa.eu/jrc/sites/default/files/jrc120945_policy_brief_-_covid_and_telework_final.pdf;
- EU PARLIAMENT, *The impact of teleworking and digital work on workers and society - Special focus on surveillance and monitoring, as well as on mental health of workers*, Study requested by the EMPL committee, Luxembourg, 2021, pp. 1-174, [https://www.europarl.europa.eu/RegData/etudes/STUD/2021/662904/IPOL_STU\(2021\)662904_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2021/662904/IPOL_STU(2021)662904_EN.pdf);
- EUROFOUND AND CEDEFOP, *Innovation in EU companies: do workplace practices matter?*, European Company Survey 2019 series, Publications Office of the European Union, Luxembourg, 2021, pp. 1-28, <https://www.eurofound.europa.eu/lt/publications/policy-brief/2021/fostering-innovation-in-european-companies-role-of-workplace-practices>;
- EUROFOUND AND ILO, *Working anytime, anywhere: The effects on the world of work*, Publications Office of the European Union, Luxembourg, and the International Labour Office, Geneva, 2017, pp. 1-80, <https://www.eurofound.europa.eu/publications/report/2017/working-anytime-anywhere-the-effects-on-the-world-of-work>;
- EUROFOUND, *COVID-19 could permanently change teleworking in Europe*, Luxembourg, 2020d, <https://www.eurofound.europa.eu/news/news-articles/covid-19-could-permanently-change-teleworking-in-europe>;
- EUROFOUND, *COVID-19: Implications for employment and working life*, COVID-19 series, Publications Office of the European Union, Luxembourg, 2021, pp. 1-86, <https://www.eurofound.europa.eu/publications/report/2021/covid-19-implications-for-employment-and-working-life>;
- EUROFOUND, *Employee monitoring and surveillance: the challenges of digitalisation*, Publications Office of the European Union, Luxembourg, 2020b, pp. 1-56, <https://www.eurofound.europa.eu/publications/report/2020/employee-monitoring-and-surveillance-the-challenges-of-digitalisation>;
- EUROFOUND, *Employment and working conditions of selected types of platform work*, Publications Office of the European Union, Luxembourg, 2018, pp. 1-86, <https://www.eurofound.europa.eu/publications/report/2018/employment-and-working-conditions-of-selected-types-of-platform-work>;
- EUROFOUND, *Game changing technologies: Exploring the impact on production processes and work*, Publications Office of the European Union, Luxembourg, 2018b, <https://www.eurofound.europa.eu/publications/report/2018/game-changing-technologies-in-european-manufacturing>;
- EUROFOUND, *Living, working and COVID-19 (Update April 2021): Mental health and trust decline across EU as pandemic enters another year*, 2021a, pp. 1-21, <https://>

- www.eurofound.europa.eu/publications/report/2021/living-working-and-covid-19-update-april-2021-mental-health-and-trust-decline-across-eu-as-pandemic;
- EUROFOUND, *Living, working and COVID-19*, COVID-19 series, Publications Office of the European Union, Luxembourg, 2020c, pp. 1-80, https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef20059en.pdf;
- EUROFOUND, *New tasks in old jobs: Drivers of change and implications for job quality*, Publications Office of the European Union, Luxembourg, 2018a, pp. 1-28, <https://www.eurofound.europa.eu/publications/report/2018/new-tasks-in-old-jobs-drivers-of-change-and-implications-for-job-quality>;
- EUROFOUND, *Platform work: types and implications for work and employment - Literature review*, 2018, pp. 1-132, <https://www.eurofound.europa.eu/data/platform-economy/records/platform-work-types-and-implications-for-work-and-employment-literature-review>;
- EUROFOUND, *Sixth European Working Conditions Survey: 2015 – Overview report*, Publications Office of the European Union, Luxembourg, 2017, pp. 1-164, <https://www.eurofound.europa.eu/surveys/european-working-conditions-surveys/sixth-european-working-conditions-survey-2015>;
- EUROFOUND, *Tackling labour shortages in EU Member States*, Publications Office of the European Union, Luxembourg, 2021, pp. 1-82, <https://www.eurofound.europa.eu/publications/report/2021/tackling-labour-shortages-in-eu-member-states>;
- EUROFOUND, *Telework and ICT-based mobile work: Flexible working in the digital age*, New forms of employment series, Publications Office of the European Union, Luxembourg, 2020a, pp. 1-66, <https://www.eurofound.europa.eu/publications/report/2020/telework-and-ict-based-mobile-work-flexible-working-in-the-digital-age>;
- EUROFOUND, *The future of manufacturing in Europe*, Publications Office of the European Union, Luxembourg, 2019, pp. 1-80, <https://www.eurofound.europa.eu/publications/report/2019/the-future-of-manufacturing-in-europe>;
- EUROPEAN AGENCY FOR SAFETY AND HEALTH AT WORK, *OSH and the future of work: benefits and risks of artificial intelligence tools in workplaces*, 2019, pp. 1-18, <https://osha.europa.eu/en/publications/osh-and-future-work-benefits-and-risks-artificial-intelligence-tools-workplaces/view>;
- EUROPEAN TRADE UNION CONFEDERATION, *COVID-19 watch ETUC briefing on new technologies allowing more surveillance at work*, 2020, pp. 1-6, https://www.etuc.org/sites/default/files/publication/file/2020-10/20200930_covid-19%20Briefing%20on%20surveillance%20technologies%20%28002%29.pdf;
- EUROSTAT, *Employment - annual statistics*, 2020, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Employment_-_annual_statistics#Remote_work_significantly_up_in_2020;

- EUROSTAT, *How usual is it to work from home?*, May 17, 2021, <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/edn-20210517-2>;
- FANA M., TOLAN S., TORREJÓN S., URZI BRANCATI C., FERNÁNDEZ-MACÍAS E., *The COVID confinement measures and EU labour markets*, EUR 30190 EN, Publications Office of the European Union, Luxembourg, 2020, pp. 1-32, <https://publications.jrc.ec.europa.eu/repository/handle/JRC120578>;
- FONDAZIONE TARANTELLI, *Lavoro e piattaforme digitali: un approccio multidisciplinare*, Working Papers, No. 13, Roma, 2018, pp. 1-40;
- FORD M., *Rise of the robots: technology and the threat of a jobless future*, New York, 2015, pp. 1-81, https://www.uc.pt/feuc/citcoimbra/Martin_Ford-Rise_of_the_Robots;
- GABRIELLI E., RUFFOLO U., *Intelligenza artificiale e diritto, giurisprudenza italiana*, Milano, 2019, pp. 1657-1778;
- GAHAN P., HEALY J., NICHOLSON D., *Technology, the digital economy and the challenge for labour market regulation*, in HOWE J., CHAPMAN A. ET AL. (Eds.), *The evolving project of labour law: foundations, development and future research directions*, Alexandria, 2017, pp. 276-291;
- GAUDIO G., *Algorithmic management, poteri datoriali e oneri della prova: alla ricerca della verità materiale che si cela dietro l'algoritmo*, LLI Labour & Law Issues, Vol. 6, Fasc. 2, 2020, pp. 19-71;
- GAUTIÉ J., JAEHRLING K., PEREZ C., *Neo-Taylorism in the digital age: workplace transformations in French and German retail warehouses*, Département des relations industrielles, Université Laval, RI/IR, 75-4, 2020, pp. 774-795;
- GAY D. S., KAGAN A. M., *Big data and employment law: what employers and their legal counsel need to know*, ABA Journal of Labor & Employment Law, Vol. 33, Fasc. 2, Chicago, 2018, pp. 191-209;
- GIFFORD C., *COVID-19 raises questions about employee surveillance technology*, European CEO, 2020, <https://www.europeanceo.com/home/featured/COVID-19-raises-questions-about-employee-surveillance-technology/>;
- GOLDFARB A., TUCKER C., *Digital Economics*, Journal of Economic Literature, 2019, Vol. 57, Fasc. 1, 2019, pp. 3-43, <https://pubs.aeaweb.org/doi/pdf/10.1257/jel.20171452>;
- GRAZ J.-C., *The power of standards - Hybrid authority and the globalisation of services*, Cambridge, 2019, pp. 1-258;
- HALONEN T., LIUKKUNEN U. (Eds.), *International Labour Organization and Global Social Governance*, Helsinki, 2020, pp. 1-151, <https://doi.org/10.1007/978-3-030-55400-2>;

- HENDRICKX, F., *European labour law and the Millennium shift: from post to (social) pillar*, in HENDRICKX F., DE STEFANO V. (Eds.), *Game changers in labour law: shaping the future of work*, The Netherlands, 2018, pp. 49-62;
- HENDRICKX F., *From digits to robots: the privacy-autonomy nexus in new labor law machinery*, *Comparative Labor Law & Policy Journal*, No. 40, 2019, pp. 365-388;
- HENDRICKX, F., *Regulating new ways of working: from the new 'wow' to the new 'how'*, *European Labour Law Journal*, Vol. 9, Fasc. 2., 2018, pp. 195-205;
- HINOJOSA C., POTAU X., *Advanced industrial robotics: Taking human-robot collaboration to the next level*, Eurofound and EU Commission Working Paper, 2017, pp. 1-37, <http://www.metalonia.com/w/documents/wpfomeef18003.pdf>;
- ICHINO P., *Le conseguenze dell'innovazione tecnologica sul diritto del lavoro*, *Rivista Italiana di Diritto del Lavoro*, No. 4, 2017, pp. 525-563;
- ILO, *A policy framework for tackling the economic and social impact of the COVID-19 crisis*, ILO Policy brief, Geneva, 2020a, pp. 1-17, https://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/briefingnote/wcms_745337.pdf;
- ILO, *From potential to practice: preliminary findings on the numbers of workers working from home during the COVID-19 pandemic*, ILO Policy brief, Geneva, 2021a, pp. 1-16, https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/--travail/documents/briefingnote/wcms_777896.pdf;
- ILO, *ILO centenary declaration for the future of work*, Geneva, 2019, pp. 1-14, https://www.ilo.org/wcmsp5/groups/public/@ed_norm/@relconf/documents/meeting-document/wcms_711674.pdf;
- ILO, *Teleworking arrangements during the COVID-19 crisis and beyond*, Paper prepared for the 2nd Employment Working Group Meeting under the 2021 Italian Presidency of the G20 International Labour Organization (ILO), Geneva, 2021c, pp. 1-16, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---ddg_p/documents/publication/wcms_791858.pdf;
- ILO, *Teleworking during the COVID-19 pandemic and beyond. A practical guide*, Geneva, 2020b, pp. 1-47, https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/--travail/documents/instructionalmaterial/wcms_751232.pdf;
- ILO, *The future of work in the digital economy*, Geneva, 2020, pp. 1-33, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---cabinet/documents/publication/wcms_771117.pdf;
- ILO, *World employment and social outlook - The role of digital labour platforms in transforming the world of work*, Geneva, 2021, pp. 1-285, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_771749.pdf;

- ILO, *World employment and social outlook: trends 2021*, Geneva, 2021b, pp. 1-164, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_795453.pdf;
- IVANOVA M., BRONOWICKA J., KOCHER E., DEGNER E., *The app as a boss? Control and autonomy in application-based management*, Frankfurt, 2018, pp. 1-28, <https://cihr.eu/wp-content/uploads/2015/07/The-App-as-the-Boss.pdf>;
- KATSABIAN T., *It's the end of working time as we know it: new challenges to the concept of working time in the digital reality*, McGill Law Journal, Vol. 65, Fasc. 3, 2020, pp. 379-420;
- KÉFER F., *The Right to Disconnect. A Response to One of the Challenges Raised by the Digital Transition? European and Belgian perspectives*, 2021, <http://hdl.handle.net/2268/259740>;
- LAI M., *Innovazione tecnologica e riposo minimo giornaliero*, Diritto delle Relazioni Industriali, No. 3, Milano, 2020, pp. 662-681;
- LETTIERI N., DONÀ S., *Critical data studies e tecno-regolazione. Paradigmi emergenti di ricerca e tutela nell'era del lavoro data-driven*, Diritti Fondamentali, No. 2, 2020, pp. 1007-1044, <http://dirittifondamentali.it/wp-content/uploads/2020/09/Fascicolo-2-2020.pdf>;
- LIUKKUNEN U., *The ILO and transformation of labour law*, in HALONEN T., LIUKKUNEN U. (Eds.), *International Labour Organization and Global Social Governance*, Switzerland, 2021, pp. 17-49, <https://link.springer.com/content/pdf/10.1007%2F978-3-030-55400-2.pdf>;
- MARINELLI F., *Pandemia e mercato del lavoro nella prospettiva internazionale: il vero antidoto è la tecnologia*, Lavoro Diritti Europa, No. 3, 2020, pp. 1-10;
- MCÉWAN I., *Digital transformation, la chiave di volta*, in BACCI A., FRIERI F. R., SPARTACO S. (a cura di), *Trasformazione digitale & smart working nella pubblica amministrazione*, Santarcangelo di Romagna (RN), 2021, pp. 31-43;
- MCGAUGHEY E., *Will robots automate your job away? Full employment, basic income, and democracy*, *Industrial Law Journal* (forthcoming), Cambridge, 2021;
- McKEE D., MAKELA F., SCASSA T. (Eds.), in collaboration with TREMBLAY-HUET S., *Law and the "Sharing Economy" - Regulating online market platforms*, Ottawa, 2018, pp. 1-246;
- McKINSEY GLOBAL INSTITUTE, *The future of work after COVID-19*, 2021, pp. 1-152;
- McPARLAND C., CONNOLLY R., *Dataveillance in the Workplace: Managing the Impact of Innovation*, *Business Systems Research Journal*, No. 11, 2020, pp. 106-124, https://www.researchgate.net/publication/340799980_Dataveillance_in_the_Workplace_Managing_the_Impact_of_Innovation;

- MOORE P. V., *Watching the watchers: surveillance at work and notes for trade unionists*, International Journal of Labour Research, Vol. 9, Fasc. 1–2, 2019, pp. 103-122, https://labordoc.ilo.org/discovery/delivery/41ILO_INST:41ILO_V2/1271439800002676?lang=en&viewerServiceCode=AlmaViewer;
- MURO M., LIU S., WHITON J., KULKARNI S., *Digitalization and the American workforce*, 2017, pp. 1-60, https://www.brookings.edu/wp-content/uploads/2017/11/mpp_2017nov15_digitalization_full_report.pdf
- NEDELKOSKA, L. AND QUINTINI G., *Automation, skills use and training*, OECD Social, Employment and Migration Working Papers, No. 202, Paris, 2018, pp. 1-125, <https://doi.org/10.1787/2e2f4eea-en>;
- OECD, *Policy responses to new forms of work*, Paris, 2019, pp. 1-100, https://www.oecd-ilibrary.org/social-issues-migration-health/policy-responses-to-new-forms-of-work_0763f1b7-en;
- ORGANIZE, *Amazon: What's it like where you work?*, 2018, pp. 1-14, <https://static1.squarespace.com/static/5a3af3e22aeba594ad56d8cb/t/5ad098b3562fa7b8c90d5e1b/1523620020369/Amazon+Warehouse+Staff+Survey+Results.pdf>;
- PASTUH D., GEPPERT M., *A “Circuits of Power”- based perspective on algorithmic management and labour in the Gig Economy*, Industrielle Beziehungen, No. 2, 2020, pp. 179-204;
- PERULLI A., TREU T. (Eds.), *The future of work - Labour law and labour market regulation in the digital era*, The Netherlands, 2021, pp. 1-327;
- PETIT N., *Big tech and the digital economy: the moligopoly scenario*, Oxford, 2020, pp. 1-297;
- PILAAAR J., *Assessing the Gig Economy in comparative perspective: how platform work challenges the French and American legal orders*, Journal of Law and Policy, Vol. 27, Fasc. 1, 2018, pp. 47-93;
- PIZZOFERRATO A., *Platforms, unions and workers: is collective bargaining possible?*, in PERULLI A., TREU T. (Eds.), *The future of work - Labour law and labour market regulation in the digital era*, The Netherlands, 2021, pp. 237-249;
- PONZELLINI A. M., *Tecnologie, fine della presenza e dilemmi del controllo nei nuovi pattern spazio-temporali del lavoro*, Il Mulino, No. 1, Bologna, 2020, pp. 89-108;
- POTOCKA-SIONEK N., ALOISI A., *‘Festina Lente’: the ILO and EU agendas on the digital transformation of work*, International Journal of Comparative Labour Law and Industrial Relations, Vol. 37, Fasc. 1, 2021, pp. 1-30, <https://ssrn.com/abstract=3694754>;
- PRASSL J., *Humans as a service: the promise and perils of work in the Gig Economy*, Oxford, 2018, pp. 1-208;

- PRASSL J., *Una voce collettiva nell'economia delle piattaforme: problematiche, opportunità, soluzioni*, Rapporto per la Confederazione Europea dei Sindacati (CES), 2018, pp. 1-38;
- REUTERS INSTITUTE, *Digital News Report 2018*, 2018, pp. 1-144, <https://s3-eu-west-1.amazonaws.com/media.digitalnewsreport.org/wp-content/uploads/2018/06/digital-news-report-2018.pdf>
- RICCOBONO A., BOLOGNA S., *"A cosa stai pensando?". Libertà di pensiero e diritto del lavoro ai tempi dei social network*, *Variazioni su Temi di Diritto del Lavoro*, No. 3, 2020, pp. 819-847;
- ROSSINI M., CIFONE F. D., KASSEM B., COSTA F., PORTIOLI-STAUDACHER A., *Being lean: how to shape digital transformation in the manufacturing sector*, *Journal of Manufacturing Technology Management*, Vol. 32, Fasc. 9, Bingley, 2021, pp. 239-259, <https://www.emerald.com/insight/content/doi/10.1108/JMTM-12-2020-0467/full/pdf?title=being-lean-how-to-shape-digital-transformation-in-the-manufacturing-sector>;
- SILVA R., DE OLIVEIRA J.C., GIRALDI G.A., *Introduction to Augmented Reality*, National Laboratory for Scientific Computization, Brazil, 2003, pp. 1-11, <https://www.Incc.br/~jauvane/papers/RelatorioTecnicoLNCC-2503.pdf>;
- SCHWAB K., *The fourth industrial revolution*, World Economic Forum, Geneva, 2016, pp. 1-184;
- SMIDS J., NYHOLM S., BERKERS H., *Robots in the workplace: a threat to - or opportunity for - meaningful work?*, *Philosophy & Technology*, No. 33, 2020, pp. 503-522;
- STONE P. ET AL., *Artificial intelligence and life in 2030 - One hundred year study on Artificial Intelligence – Report of the 2015 study panel*, Stanford, 2016, pp. 1-52, https://ai100.stanford.edu/sites/g/files/sbiybj9861/f/ai100report10032016fnl_singles.pdf;
- TODOLÍ SIGNES A., *En cumplimiento de la primera Ley de la robótica: análisis de los riesgos laborales asociados a un algoritmo/inteligencia artificial dirigiendo el trabajo*, *LLI Labour & Law Issues*, Vol. 5, Fasc. 2, 2019, pp. 1-38;
- TOFFLER A., *The third wave*, New York, 1980, pp. 1-544;
- TOURING A., *Le nuove tecnologie e l'impatto sul lavoro*, in BACCI A., FRIERI F. R., SPARTACO S. (a cura di), *Trasformazione digitale & smart working nella pubblica amministrazione*, Santarcangelo di Romagna (RN), 2021, pp. 109-125;
- TROISI A., *Potere informatico del datore di lavoro e controllo sui lavoratori, cinquant'anni dopo*, *Diritti Fondamentali*, No. 2, 2020, pp. 1411-1438;
- VAN BARNEVELD J., JANSSON T., *Additive manufacturing: A layered revolution*, Eurofound and EU Commission Working Paper, 2017, pp. 1-33, <https://euagenda.eu/upload/publications/untitled-150334-ea.pdf>;

- WERBACH K. (Ed.), *After the digital tornado - Networks, algorithms, humanity*, Cambridge, 2020, pp. 1-239;
- WORLD ECONOMIC FORUM, *The Future of Jobs Report*, Geneva, 2018, pp. 1-147, http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf;
- ZILLI A., *Il lavoro su piattaforma*, in CARINCI F., PIZZOFRERATO A. (a cura di), *Diritto del lavoro dell'Unione Europea*, Torino, 2021, pp. 313-322;
- ZUCARO R., *Il diritto alla disconnessione tra interesse collettivo e individuale. Possibili profili di tutela*, LLI Labour & Law Issues, Vol. 5, Fasc. 2, 2019, pp. 214-233.